

Flight, November 4, 1911.

# FLIGHT

First Aero Weekly in the World.

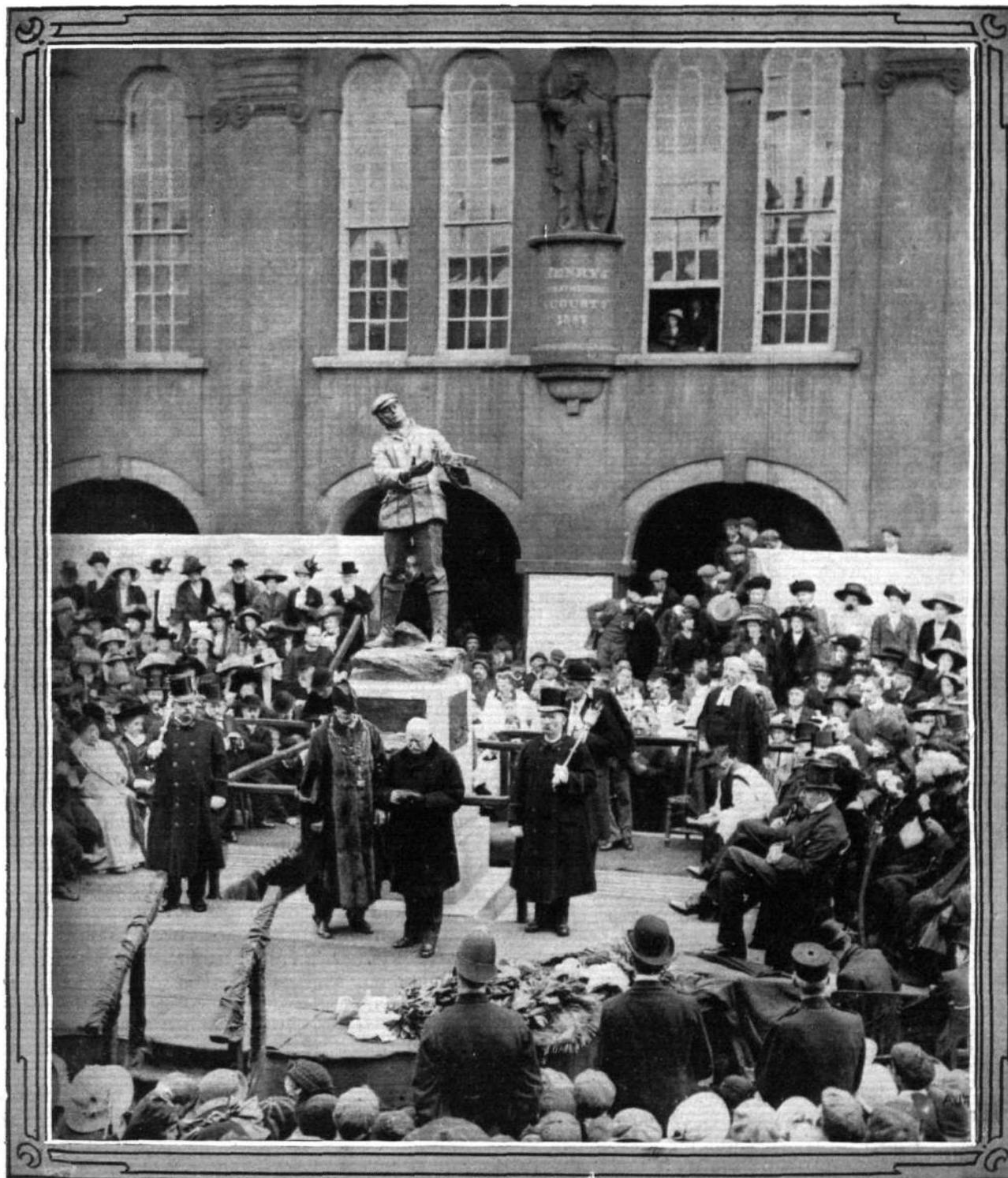
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THE ROLLS MEMORIAL AT MONMOUTH.—The Unveiling by Lord Raglan on October 19th. Our photograph shows Lord Liangattock, father of the late Hon. C. S. Rolls, supported by the Lord Mayor of Cardiff, thanking the people for their sympathy. On the right are seated Lady Liangattock, Lord Raglan, &c.

## EDITORIAL

**At last.** Colonel Seely's statement in Parliament on Monday evening, October 30th, should fan the fires of enthusiasm in any hearts

that have been growing cool towards aviation by the neglect hitherto so apparent in official quarters. It appears that the Government is at last going to make some really tangible move towards placing military aviation in England on the footing that is not only desirable but absolutely necessary if this country is to take any place at all in the movement. Also, at last, it seems that the aeroplane has definitely won over official recognition of its merits, for we fail to observe any direct reference to airships in the whole of Col. Seely's important speech. His statements we have not failed to put on record in extenso elsewhere, and as we can scarcely imagine any reader of FLIGHT failing to peruse the full text, word for word, it is unnecessary to recapitulate the very clearly expressed words of the Under-Secretary for War.

Needless to add, also, that we welcome whole-heartedly this evidence of intended action on the part of the Government although, merely in a spirit of progress, we would add that we hope their ultimate actions will not stop short at the fulfilment of their present intentions. There is one little point that will not escape the attention of our readers, which is the simple explanation advanced by Col. Seely to account for the apparent hesitancy of the Government to act in this matter heretofore. It was apparently due to a well-meaning intention that Great Britain should possess the best of everything when it was possessed of anything at all. It is curious how simple-minded a Government can be in these matters, for you would think that ordinarily worldly experience would be sufficient to show anyone the impossibility of making a beginning at the end of things or of even finding the end of things at all. The whole essence of progress is progression, and if the aeroplane were to stay where it is to-day the British Government might be justified in thus far having kept its money in its pocket. But as it is, where France is England might have been, and, as Col. Seely admitted, France is already a long way ahead of the rest of the world. But France did not wait for the aeroplane to grow perfect ; she was wise in her generation and just took her place as leader the moment that it was obvious that there was a definite direction in which to forge ahead, and to-day the British Government decides that it will do likewise, neither more nor less. The aeroplane is improved, but no one suggests that it is perfect ; much more is now accomplished as a matter of course by pilots than formerly was ever attempted, but it is far less than they hope to achieve some day.

So, while we decide to wait for the perfect article, we may go on kicking our heels on the platform as the trains of progress rush by. Only when we decide that the imperfect vehicle is good enough to travel by for the time being, shall we ever reach any destination whatever, or find ourselves in a position to profit by improvements as they come into the world.

Encourage  
the Home  
Industry.

And now let us come to the main issue, which is, that the Government, having decided that they will no longer wait for perfection, should see to it that they encourage our own industry. France has not thrived through the purchase of foreign-made goods, but through the persistent buying of the home-made article, which,

## COMMENT.

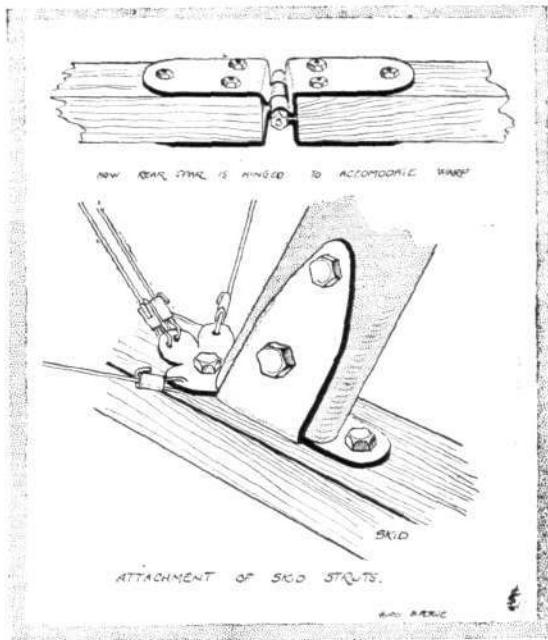
we venture to suggest, was neither perfect in the first instance, nor any better than some of our engineers could have produced under similar stimulus. On the whole it seems to us that the British aeronautical industry has expanded and developed itself uncommonly well, and if the Government would only show a firm support at the back of the movement, we feel confident that it would at least keep step with any foreign enterprise. After all, it is quite impossible to do anything nowadays without money, and so long as the industry is supported by voluntary contributions, so to speak, those who fly as the wind takes them, and buy a machine or build one for themselves as pleases their fancy, there is necessarily lacking that steady under-current of constant demand which is the life blood of any commercial undertaking. The Government, when it takes up flying, flies in a professional sense on a steadily increasing scale, which automatically means a steadily increasing demand for aeroplanes in England. Thus it is, therefore, that the Government can back the industry to the interest of Britain by merely spending the money that it has got to spend, anyway, in our own market. It is all very well to acquire foreign-built machines for purposes of experiment, but now that aviation is being taken seriously by our Government, we sincerely hope that there will be no extensive purchase of foreign-built aeroplanes and engines for the country's needs. If the Government prefers something that is of foreign design to anything that is original to this country they can at least have it built here, even if it be a matter of first paying royalty. The Government, we presume, is not out for cheap catering in this particular branch of its activities ; and, once that those interested in the British industry know that the support which is its due is to be accorded, the country will not long have to remain without either the best machines or the least expensive.

**Death  
in the Air.** During recent weeks there has not been so much of an outcry in the columns of the dailies with regard to the dangers of flying.

This is a good sign, for it indicates that newspapers and the public have regained something of a sense of proportion in this connection, but all the same we have noted comments upon the fact that the century of aerial fatalities has been reached, some of them drawing the familiar moral. No one can regret the loss of precious lives more than we, but much as we may deplore the accidents which have attended the development of flying, we cannot blind ourselves to the fact that no progress can be made in anything without sacrifice of some sort. It is not our purpose, however, to justify or even to deplore the aerial death roll, but rather to make a lurid comparison and invite our readers to draw their own conclusions. Since the first man flew, it is claimed that one hundred aviators have lost their lives. During the year 1911 no less than 115 people have been killed and 37 seriously injured while climbing the Alps. All sorts of opprobrious terms have been used to describe the foolhardiness of the men who fly. Newspapers have inveighed against the danger of it, and hysterical old women of both sexes have let themselves go on the subject, but figures such as we have quoted pass almost without notice and absolutely without comment. And the paradox is that even those same hysterical individuals will admit that aviation has its useful side—but what can be said of mountain climbing ?

## THE AVRO BIPLANE.

THREE things at least stand to the credit of A. V. Roe, the development of the first successful triplane, the application of the monoplane type body on multiplane machines, and the construction of commercial aeroplanes for men of moderate means. Aeroplaning is considered the sport of the few, but all along it has apparently been A. V. Roe's object to make



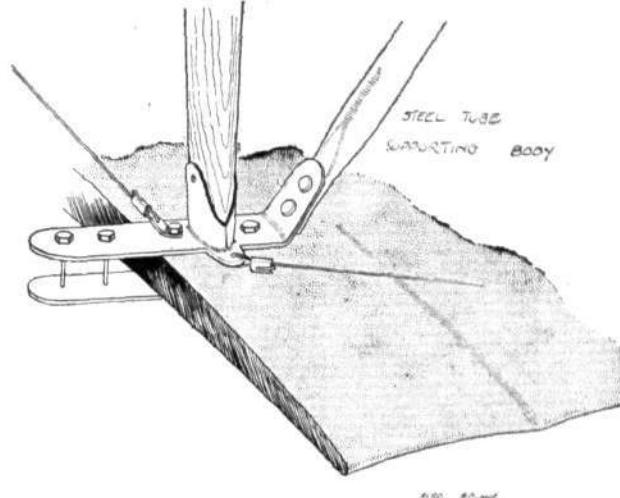
Constructional details of the Avro biplane.

it the pastime of the many, for it has been his ambition to build machines that are inexpensive in initial cost and reasonable in upkeep.

Regarded purely from the technical standpoint, the design of the Avro biplane is characterised by its slender gracefulness, which is perhaps less appreciated by those inartistic souls who regard extreme robustness as the first principle

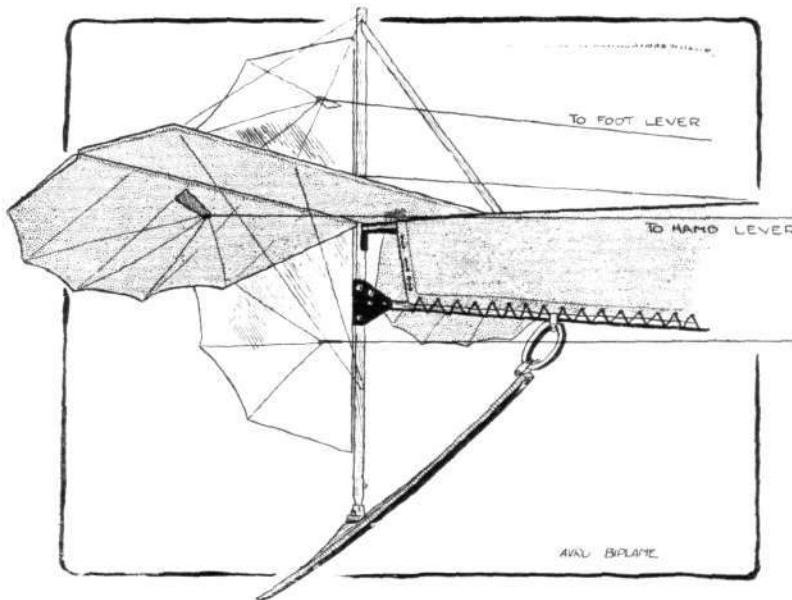
has been made at remedying the unwieldiness and awkwardness of transport that has so long characterised machines of cellular construction. To effect this, the main supporting surfaces are constructed in sections that are readily attachable and detachable by means of the simple clip illustrated.

A subsidiary advantage that this method of construction possesses is the ease with which the wing can be repaired by merely replacing a damaged section. This feature alone should place the Avro design in favour with those who have experienced the tedious stripping, boom-grafting, rib-refitting and recovering process associated with the general run of such machines. The planes are covered



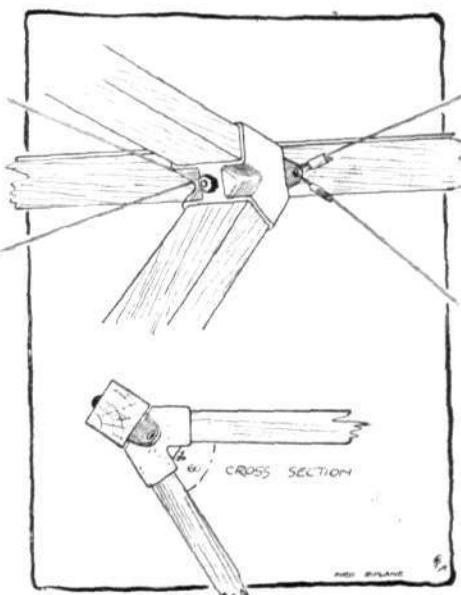
The method employed on the Avro biplane of assembling the wing sections.

on both sides with cotton fabric, which is sized and varnished after being stretched in position over the wooden wing skeleton. Warping is utilised to preserve lateral balance, the end sections of the planes being flexed much after the manner adopted by the Wright Brothers. To accommodate the warping movement the rear boom of each end section is hinged to its rigidly-braced continuation in the inner wing



Arrangement of the tail unit of the Avro biplane.

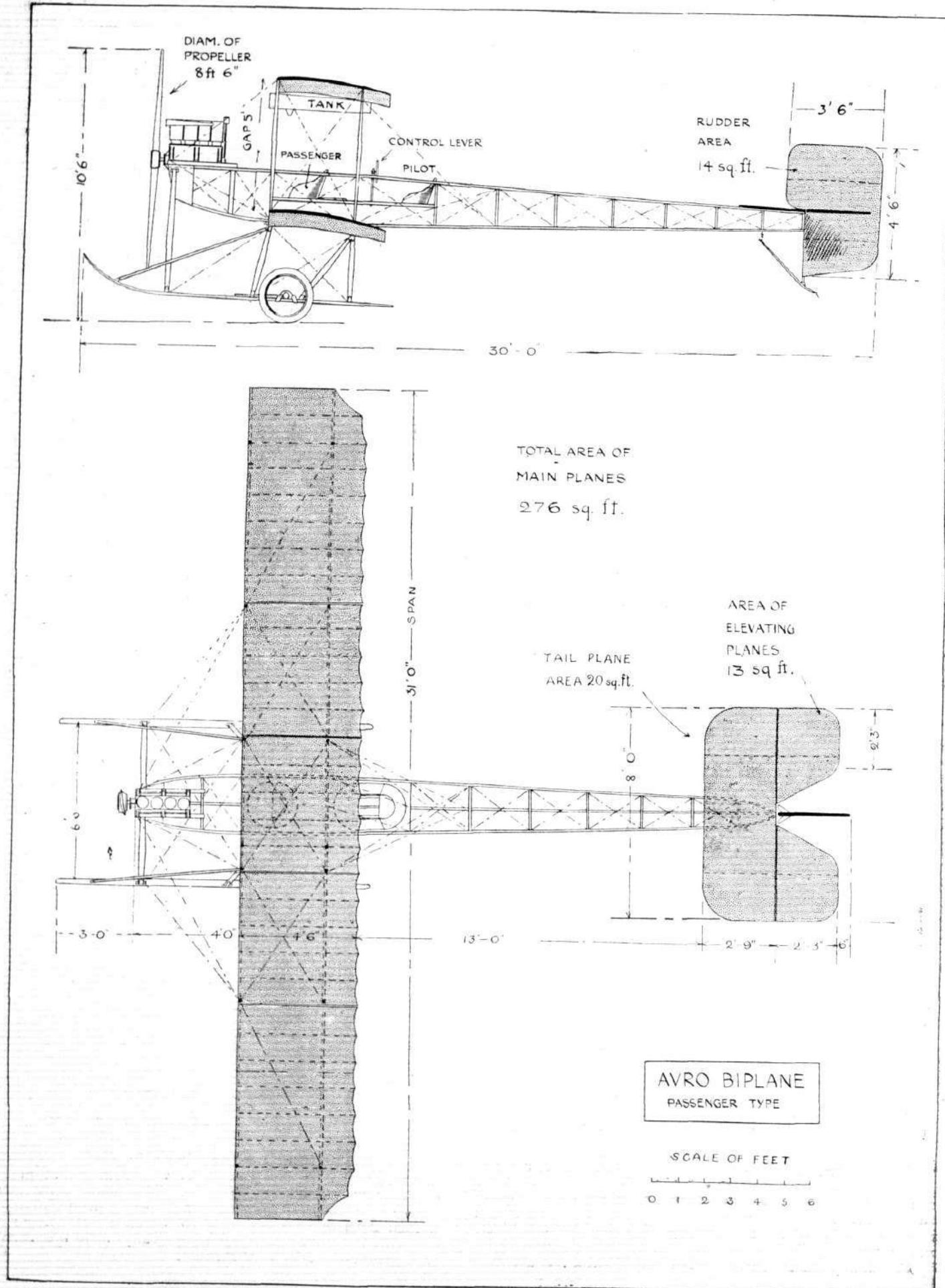
in construction. Nevertheless, the designer seeks to acquire more than mere pleasing lines, for efficiency has ever been one of the principal objects that this pioneer constructor has sought to obtain with his machine. In his present model not only has the attribute of efficiency been combined with symmetry of outline and the safety of the pilot obtained by the monoplane type body construction, but a real attempt



The Avro method of cross-bracing the main body.

sections by the simple hinge shown in the accompanying sketch, so that in the process of wing flexing that portion of the rear boom moves helically. The compression struts that brace the main planes are held in position by welded steel sockets and ears, to which the bracing wires are attached, and are formed integrally with the base of each socket—a really neat method.

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THE AVRO BIPLANE—Plan and elevation to scale.

The main body, of equilateral triangular section, is roughly boat-shaped, and assumes its maximum beam and draught just forward of the pilot's seat. At its front end, mounted on stout bearers which are in reality continuations of the top pair of body longitudinals, is the engine, a 35-h.p. Green, coupled direct to an 8 ft. 6 in. Avro propeller.

A very convenient point about the Roe body, from a constructor's point of view, is that its upper surface is flat from end to end and forms a "level line" from which all adjustments can be made. Thus the engine is merely placed in position on its bearers and no vertical adjustment whatever is required to ensure the propeller revolving in a plane normal to the line of flight. Similarly the flat, non-lifting tail needs no further adjustment after it has been fixed in position on the upper surface of the body.

Apart from this consideration, the main body of the Avro biplane possesses further interest in that it is cross-braced in a very neat manner. This is illustrated in Fig 3. An aluminium socket, in which the transverse struts are assembled, is applied to the longitudinal member by a single bolt, which also keeps in position a mild steel wiring lug. In this way the whole of the longitudinal spar can be removed or replaced by simply withdrawing the several bolts that keep it in position, without disturbing the remainder of the body. Each wire is tightened by a wire strainer.

The front end of the body is armoured with a "nose" of pressed steel, while, for a length of 2 ft. aft of this, aluminium paneling is applied to serve as a drip tray for oil leaking from the engine and to preserve the approximate stream line form of the body. From this point to its rear end the fuselage is covered with fabric.

Opinions vary as to the advisability of carrying this covering further than a point just to the rear of the pilot's cockpit on the grounds that an adverse affect is experienced in side winds. Such discussion can hardly be applied in this case, for the Avro biplane has proved, both in the hands of Pixton and Raynham, a most stable craft in wind. In

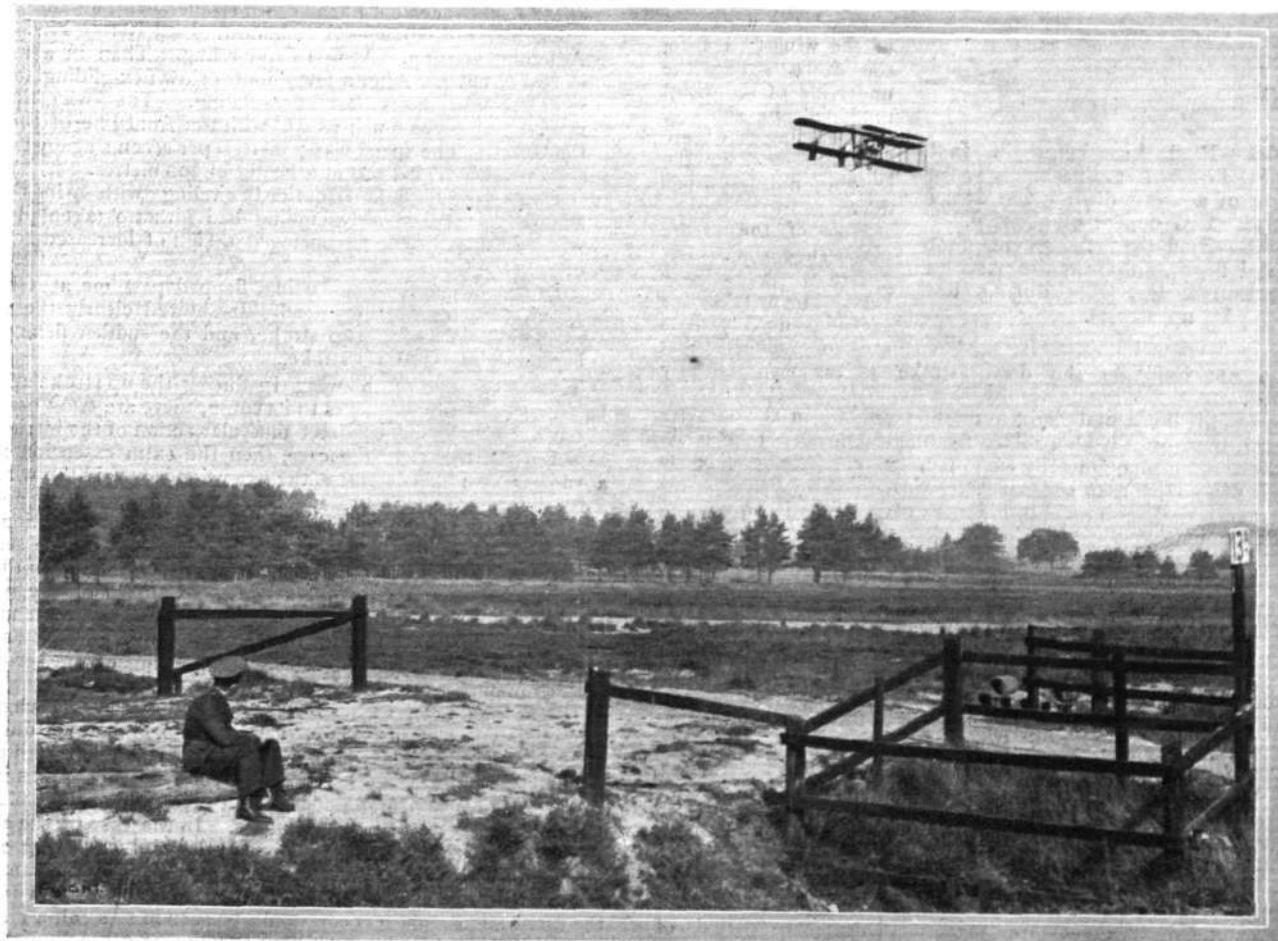
any case it cannot be more harmful than those vertical stabilising fins that are still used to advantage by such constructors as the Antoinette Co., Robert Esnault-Pelterie, and Blackburn, while its correcting effects in case of a side dive are undoubted and easily apparent.

The landing carriage needs little description, as it has much in common with Henry Farman's conception, but being lower in build it is possibly stronger. Two fairly thick struts connect the front of the main body with the forward parts of the skids to protect the former from strain in the event of a rough landing.

The tail group is unique as regards the shape and area of the flat fixed plane, to the rear edge of which are hinged the two elevators. The former organ is rectangular and of a fairly high aspect ratio. Its area seems rather on the small side and, as has been discovered by experience, the elevator is thus rendered more sensitive. The reason for the employment of such a small directional surface is, it appears, an effort to eliminate the depressing effect on the tail produced when a large flat surface is working in the down draught of the wake from the main planes.

Both the rudder and the pair of elevating flaps swing on sets of hinges, having one pin to each series. A wooden skid, anchored by a stout elastic band to the bottom member of the body and loosely attached to the mast, which forms the rudder post, and to which the horizontal tail surface is braced, protects the tail unit.

The controlling surfaces are operated by a central lever, at the upper extremity of which is mounted a rotatable wheel, which governs the wing warping. A backward and forward motion of this lever controls elevation and depression. For the reason that the hand-wheel lever is conveniently placed and that the movements are to a great degree natural, this form of control is steadily gaining favour, and has been adopted by many of the leading constructors, among them Messrs. Short Bros. on their latest machine, and the Maison-Deperdussin. A pivoted foot bar operates the rudder.



Mr. S. F. Cody making his fine flight at Aldershot on Sunday last for the British Michelin prize, when he remained up for over five hours, covering 26½ miles in the time.

# A Study of Bird Flight

By Dr E.H. Hankin, M.A., D.Sc.  
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## CHAPTER XXVIII.—The Position of the Wing Tips in Flapping Flight.

THE facts to be described in the present and in the succeeding chapter will be found to give an answer to the important question as to what is the cause of the difference between lift-flapping and stop-flapping. In each case the direction of the strokes is horizontally to and fro. In the case of lift-flapping of the poising kingfisher, work is done both on the up stroke and on the down stroke. In the case of stop flapping, there is no demonstrable lifting effect, and work appears to be done on the down stroke only, and is in such a direction as to tend to check the forward progress of the bird.

If there is a resemblance between the action of the wings of the poising kingfisher, and the action of the wings when in horizontal flight, then certain consequences must follow. Firstly during the down strokes in horizontal flight there must be some yielding of the hinder part of the wing area. That is to say, when the wing is being moved downwards, its surface cannot be perpendicular to the air against which it presses. It must have such a position that the wing, when descending, forms an inclined plane, and hence drives the air backwards besides downwards. The presumed disposition of the wing on the down stroke is shown in Fig. 48. Secondly, during the up stroke, as shown in Fig. 49, the wing must bend in the opposite direction. As a matter of fact the secondary quills are attached to the wing bones in such a way that they easily yield to the air pressure during the up stroke, under all circumstances. I

have once or twice observed a vulture flapping towards the west in the afternoon, and noticed that during the up stroke the sun illuminated the underside of the wings. During the down stroke the underside of the wings remained in shadow, thus proving that there is a difference in the inclination of the wings during the up and down strokes of the nature above suggested.

But it has already been shown that the secondary quill feathers are so attached that

Fig. 48.—Pied kingfisher in fast horizontal flight, showing position of a section of a wing during the down stroke. CG centre of gravity.

Fig. 49.—Pied kingfisher in fast horizontal flight, showing the position of a section of the wing during the up stroke.

they do not yield on the down stroke if the wing is fully extended.

Therefore, if horizontal flight resembles poising in the manner suggested, then ordinary horizontal flapping-flight must take place with the wings not quite fully extended. The following extracts from my diary show that some practice was necessary before I was able definitely to determine that this is the case. The first quotation is a continuation of my observations made on August 8th.

I looked carefully to see whether the wing (of adjutants) was fully extended during flapping flight. I was able to see that at the top of the stroke the primary quills were not so fully extended as they are in circling. Probably the first primary quill could have been advanced about two inches more than was the case. I saw also, but with less certainty, this lack of full extension at the bottom of the stroke. It was to the same amount as at the top.

August 12th, 1910.—At Jharna Nullah. 5.15.—Three adjutants flapping showed all through both up and down strokes the wing-tips less than fully extended. Adjutants flap-gliding, with gliding intervals of only one or two seconds, did not make vertical up-and-down strokes before the glide. Wind west, moving leaves. Heavy clouds. No birds up except in flapping or flap-gliding flight.

August 14th, 1910.—At Futteypur-Sikri. 8.45.—A black vulture passed near flap-gliding. When flapping, its wings were less than fully extended by about three inches. During the periods of gliding its wings were fully extended.

August 27th, 1910. At Jharna Nullah. 11.50.—An adjutant seen making "half-flaps" (*i.e.*, flaps of less than usual amplitude) while circling. It was noticed that during the half-flaps the wings

were not fully extended. While gliding round the rest of the circle, the wings were fully extended.

12.0.—Adjutants flap-gliding at low-level. When flapping their wings were not fully extended. At the moment that flapping ceased to commence a period of gliding, a sudden extension of the wing tip was observed. In the case of adjutants flap-gliding at a higher level, this extension could not be seen, as they glided (presumably in more soarable air) at higher speed with wings slightly flexed.

12.6.—A vulture flapping. A sudden extension of the wing tips seen as it commenced to circle.

Since making the above observations, it has become quite easy for me to see the retirement of the wing tip in flapping flight of cheets, vultures, and other birds.

The above is an example of a case in which by practice I learnt to make an observation with ease that at first could only be made with difficulty. In such cases it has more than once happened that with increased power of observation, I have arrived at quite unexpected results. This is exemplified in the present case by the following observations:—

September 24th, 1910.—At Jharna Nullah. 11.45.—Several vultures and three adjutants circling. They flapped occasionally when at low level. Weather fine. From 1.0 p.m. onwards there were small isolated cumulus clouds.

A vulture flapping directly overhead, a few metres up, showed its wings during the up stroke less flexed than during the down stroke. A minute later this was more clearly seen in the case of another vulture, whose wings were more flexed than usual during the down stroke. Shortly afterwards I saw the same phenomenon in an adjutant; but in this case the flexing seemed to gradually decrease during the up stroke, and was followed by sudden flexing at the commencement of the down stroke.

October 6th, 1910.—At Sekundra Road Refuse Pits. 11.5.—Adjutants starting. At first flap-circling. Then in a minute or two circling. After a few minutes slow flex-gliding.

11.20.—Adjutants fast flex-gliding. The wing-tips were retired perhaps as much as 45° with the front line of the rest of the wings. The speed was 7 metres per second against a rather strong wind. This was at a height of 300 metres.

11.26.—An adjutant noticed circling with wings slightly advanced. (Presumably circling had hitherto taken place with wings straight. The advancing is a sign of increased soarability of the air.)

11.27.—An adjutant, starting, flapped past me at a height of about 5 metres over my head. It showed clearly the wing tip extending during the up stroke, and the sudden flexing at the beginning of the down stroke.

This advancing of the wing tip during the up stroke appears to be a matter of interest. As to its cause, there are two possibilities. Firstly, it may be due to direct muscular action of the intrinsic wing muscles. If this were the case, then the extra extension must be advantageous; that is to say, the extension must aid the wing doing work during the up stroke. Secondly, it is possible and more probable that the extending is not due to muscular action, but to the effect of air pressure on the upper surface of the secondary quills. As a matter of fact, in the dead bird pressure on the upper surface of the secondary quills causes extension of the wing tip. There is also the possibility that the extension during the up stroke is due to centrifugal force. But, at all events, this extension can only occur if there is a change in the position of the secondaries, such as may be caused by pressure of the air.

I have long been acquainted with the fact that the wing of the crow does not appear to move vertically up and down during fast horizontal flight. The tip of the wing (as compared with the base of the wing) appears to move in an ellipse whose long axis is nearly vertical. This appearance cannot, in my opinion, be explained by the above observations on adjutants. In the case of the adjutant, the extension can only be seen when the bird is flapping overhead at quite a short distance. Even then the observation can only be made after practice. It is extremely improbable that extension on the up stroke, should it occur, could be seen in so small a bird as the crow. The appearance must have some other cause.

The facts described in this chapter appear to leave little room for doubt that in horizontal flapping flight a propelling effect results from both the up and the down strokes of the wing.

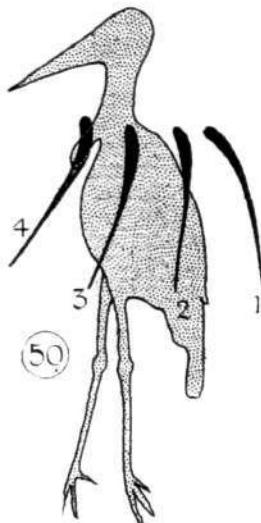


Fig. 50.—Rotation of wing of adjutant in stop flapping. The section of the wing is taken at the junction of middle and inner thirds of the wing. The numbers 1 to 4 show successive positions during the down stroke. During the up stroke the same positions are assumed, but in the reverse order. Note the pouch hanging from the neck of the bird. In some cases this pouch is more than a foot long.

seen to rotate its wings while stop flapping in the same way. (Fig. 50.)

On a later occasion (November 12th) I succeeded in seeing similar rotation during stop flapping in the case of a vulture. This bird was settling on the top of a wall.

It is obvious that the check to forward movement produced by the down stroke must be increased by this rotation of the wings. The rotation in the opposite direction during the up stroke must also tend to prevent this stroke having any lifting action. It is probable that this movement is one only visible in extreme cases, as, for instance, when the bird has to stop suddenly in nearly calm air for perching on a wall, &c. It is also probable that rotation occurs in other cases but to an amount too little to be directly observed.

In the case of the adjutant when settling, lift flapping may occasionally be observed besides stop flapping, and the difference between the two kinds of movement can be clearly appreciated. For instance:—

#### CHAPTER XXIX.—Stop Flapping.

In stop flapping it is advantageous that the wings during the down stroke should get as much grip on the air as possible. Hence, as can be very easily seen, in stop flapping the down stroke is made with the wings fully extended and consequently with maximum camber. An illustration of stop flapping showing the full extension besides advancing of the wings, in the case of the green parrot, has already been given in Fig. 20.

During the up stroke in stop flapping the wings also remain fully extended. As already explained, this full extension does not prevent the secondary quills yielding to the pressure of the air. Hence, if the preceding was the only evidence available, we should have to conclude that lifting work was done during the up stroke. But the following observations show that certainly in some cases, possibly in all cases, no lifting work of this nature is done.

September 20th, 1910.—At Jharna Nullah. 5.15.—Slight clouds. All birds settled except cheels and eagles skimming over the buildings. Some adjutants on being disturbed flapped across a shallow ravine. One turned slightly while over this ravine to settle on a wall. That is to say, it had to lose speed more quickly than would have been the case had it been alighting on level ground. During the stop flapping its wings could be clearly seen to rotate with each stroke. The rotation was such that on the down stroke the posterior margin of the wing must have been flapped forward about two or three inches more than would have been the case had there been flapping only without rotation. A few minutes later another adjutant was

August 18th, 1910. At Jharna Nullah. 5.35. Several adjutants seen settling. Just before reaching the ground they made one or two flaps with wings fully extended. Then, when their feet had reached the ground they made two or three flaps with the wing-tips less than fully extended by three or four inches. Both kinds of flaps were in a nearly horizontal direction. Those with the wings extended were ordinary stop flapping. The other flaps apparently were lift flapping to ease the strain as the weight of the bird came on to its legs.

In the case of flying foxes, I have occasionally seen an apparent sudden rotation of the wings through nearly a right angle used as a break to check speed suddenly when in horizontal flapping flight. This usually occurs to avoid a collision. In horizontal flight the wings may be seen to be flapping up and down (or perhaps generally slightly advanced with appearance of advancing on the down-stroke). In the cases mentioned the wings seem to suddenly rotate through nearly a right angle and to be flapping to and fro. But in two cases I have been able to see that this to and fro flapping occurred with the wings advanced. Probably this advancing of the wings always occurs under these conditions. Flying foxes may frequently be seen to advance their wings for poising before perching. This poising, as in the case of the kingfisher, occurs with the wings advanced and in to and fro horizontal flaps. The poising only lasts as a rule for a second or two. The hind feet then may be seen to move forward and to clutch the bough. The bat then falls over in any direction and remains hanging by its feet.

#### CHAPTER XXX.—Half flaps. Rate of Beat in Flapping.

The facts described in the preceding chapters indicate that the wings propel during the up stroke besides during the down stroke, whether the bird is poising in calm air or whether it is moving forward horizontally. In the latter case the wing must give gliding support during the down stroke. This can only occur sufficiently when the position of the wings is not far from the horizontal. Hence in horizontal flight the amplitude of the beats is diminished. Also the slower the flight the less in the range of the beats. Some examples of the range of beat under different conditions are given in Fig. 51.

A proof that horizontal flapping flight consists of propelling movements with gliding superadded is furnished by the existence of what I propose to term "half flaps," that is to say flaps in which the range of beat is unusually limited. Crows in Naini Tal when circling occasionally show half flaps. I have seen vultures make half flaps after flap-gliding, and before commencing to flex-glide at a time when the morning development of soarability was taking place. A parrot when settling may make half flaps with the wings dihedrally up and advanced. In this case the range of beat of the half flaps may be between an inch and half an inch. Half flaps when settling with the wings somewhat similarly disposed may be shown by flying foxes. Occasionally kingfishers and adjutant birds may make half flaps when settling. My notes contain mention of half flaps made by a butterfly (*Papilio ravana*) that I often observed in Naini Tal gliding for considerable distances without movement of the wings. Half flaps vary in their amplitude. That is to say there is every intermediate form of movement between gliding and flapping flight.

In poising, maintenance of the bird in the air is due to the beat of the wings alone. In horizontal flight there is also the effect of gliding to prevent loss of height. Hence one would expect that in poising the rate of beat should be quicker than in horizontal flight. In the case of the pied kingfisher, when poising, the rate of beat is

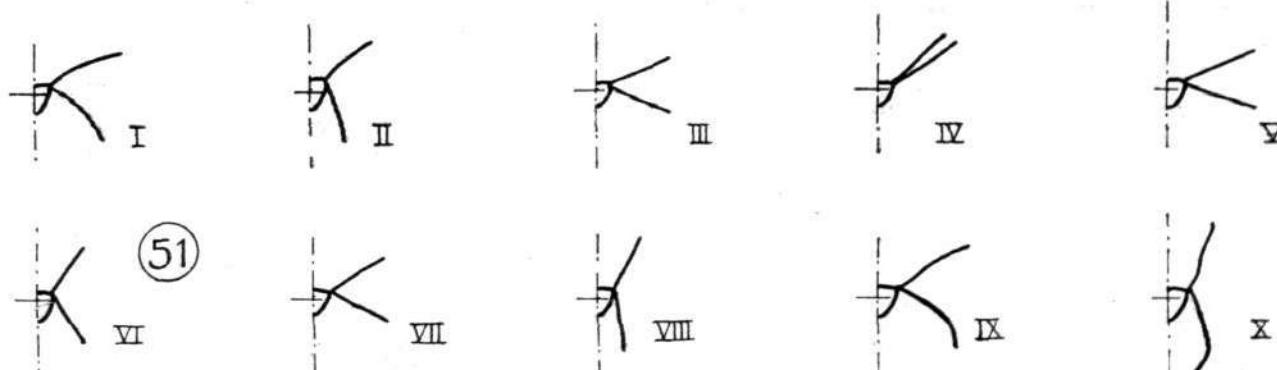


Fig. 51.—Range of beat of wing in flapping flight. In each case the bird is supposed to be seen in end-on view. Half the body only is represented, and one wing at its extreme positions. I Paddy bird. II Parrot in fast horizontal flight. III Parrot in slow horizontal flight. IV Parrot making half flaps with wings advanced and dihedrally up, as seen in perching. V Cheel in horizontal flight. VI Swift in fast horizontal flight. VII Swift in slow horizontal flight. VIII Dove flying upwards. IX Flying Fox in horizontal flight. X Flying Fox poising before settling.

too rapid to count. In some cases it is possible to see that the wings are moving to and fro with great rapidity. In one case, in twilight, the wings appeared to me as a great halo surrounding the bird. In horizontal flight the rate of beat is certainly less. The rate of beat of the flying fox in horizontal flight is usually from '3 to '4 of a second. Occasionally for short distances it may be slower. When poising, as may occur before perching, the rate of beat is greatly increased and too rapid to count. As with the kingfisher, the amplitude of the beats in poising is also greater than in horizontal flight. The flying fox, in horizontal flight, usually arches the wing at the bottom of the down stroke (Fig. 51, IX). On one occasion I was able to see that in poising the arching at the bottom of the stroke was greatly increased, so that the wings nearly met in front of the body at the end of the down stroke (Fig. 51, IX).

By the term "beat" I intend to imply an up stroke plus a down stroke. The following table gives the rate of beat, during horizontal

flight, of different species of birds that have come under my observation :—

Swift ( <i>Cypselus affinis</i> )	...	...	...	...	'1 sec.
Green parrot ( <i>Palaeornis torquatus</i> )	...	...	...	'15 to '25 sec.	
Blue jay ( <i>Coracias indica</i> )	...	...	...	'3 sec.	
Crow ( <i>Corvus splendens</i> )	...	...	...	'3 to '4 sec.	
Paddy bird ( <i>Ardeola grayi</i> )	...	...	...	'4 sec.	
Black vulture ( <i>Otogygys calvus</i> )	...	...	...	'4 "	
White scavenger vulture ( <i>Neophrons gingianus</i> )	...	...	'45	"	
Adjutant ( <i>Leptoptilus dubius</i> )	...	...	'5 to '45 sec.		
Cheal ( <i>Milvus govinda</i> )	...	...	...	'4 to '45 "	
Two or three species of wading birds	...	...	...	'5 sec.	

Some facts in my possession lead me to suspect that the rate of beat in the case of birds flying long distances varies with unknown atmospheric conditions. The matter would probably repay investigation.

(To be continued.)



## THE GOVERNMENT

At last there is a serious move to be made by the British Government in really helping forward aviation in this country. On Monday night, Mr. Sandys, M.P., raised the question of the supply of aeroplanes for the Army, he referring specifically to the intentions of the Government as outlined on July 18th by Colonel Seely, Under-Secretary for War. Continuing, Mr. Sandys said that a further statement from him would now be welcome. Much light had been thrown on the subject by the military manoeuvres on the eastern frontier of France, which he (Mr. Sandys) had followed. The impression these left upon the ordinary observer was that the aeroplane was destined to play a very important part in military operations. Information could be obtained by aeroplane reconnaissance which it would be impossible to gain in any other way in military operations.

It was made obvious that any army which in the future went into the field inadequately provided with an efficiently trained air corps and machines of the best type was taking very serious risks indeed. Recently the right hon. gentleman had made a statement on the subject which was unsatisfactory. It was highly desirable that more official encouragement should be given in regard to aviation. The encouragement given by the French Government had greatly helped in enabling France to take the front rank in the matter, and he hoped the most recent statement made by the Under-Secretary for War did not indicate a change of policy.

Colonel Seely in reply said: It would be quite erroneous to suppose that we were going back on the policy I announced in July. We are going forward. We are determined to bring this country up to a proper—indeed, to a high—standard in matters of military aviation.

Almost immediately we shall issue the terms under which officers will be able to obtain the position of Army airmen. Any officer who passes the test and obtains the Aero Club certificate (for which he must attend and pay for aviation classes) will in future receive £75. After he has obtained the certificate he will be attached to the Army Air Battalion to undergo a course of instruction in military aviation, in those branches of aviation which are of special value for military purposes—making out ground from a height, steering a course in the air by the stars or compass, and drawing an accurate map of what the airman has seen. Then the officer will become an Army airman, and will be so described in the Army List. Those officers who have already joined the Air Battalion will receive an extra £25.

After the Army airman has passed all the tests, it is proposed that he should be attached to the Air Battalion periodically for "refresher" courses. From what I have been able to ascertain about flying, I should think these refresher courses would have to be very frequent, in order that they might continue to be able to master this most difficult art. With regard to the number of aeroplanes, it appears that we have far too few. Undoubtedly we have, but the comparison is with France, which is far ahead of the rest of the world. We have all along hung back, because



### How France Encourages the Industry.

In contrast to the way in which the aviation industry is neglected by the Government of this country, it is announced from a usually well-informed quarter that in the French Military Budget



## AND AEROPLANES.

we wanted to obtain the most useful type. We thought we could afford to wait until we could arrive at a better decision as to what was the best type of aeroplane for the Army.

We have at present in the various stages nineteen aeroplanes, but I must admit that one is broken beyond repair, and one is quite out of date. We have been trying all the different types. We have eleven types, seven of which are biplanes and four monoplanes. We have learnt most useful lessons from these different types of airships, and we are now engaged in testing some of the more speedy monoplanes.

We are arriving at a point when we think we see our way to choose what is the best type, first, for teaching people to fly, and, secondly, for the purpose of war, should war unfortunately break out. As soon as the moment for choice comes—and it will come very soon—we propose to purchase an adequate number of aeroplanes, on which a large number of officers who, no doubt, will be forthcoming, will be able to fly.

Army flying is different from civilian flying, and, for war purposes, it is necessary to have a machine for two men, one to steer and the other to observe. Therefore we want a very special type of Army aeroplane. The specifications for the prizes for the Army aeroplane are now practically complete. The only points remaining to be decided are, not only the total amount, but, what is more important, the distribution of the prize-money. I hope that before the end of the present year we shall be able to announce the prize which the War Office and the Admiralty propose to offer for an Army and Navy aeroplane.

In conclusion, the Government fully recognise the immense importance of aerial scouting in war. It has passed beyond conjecture now as to whether aeroplanes can or cannot ascend in all reasonable weathers and observe large numbers of troops. Further, it is vital for any country that has an army to have an aeroplane survey. Both the War Office and the Admiralty have realised the importance of these things, and are working together to provide a really efficient scouting service. The Government will take every step to put the country on a proper footing in regard to this important subject.

Colonel Yate then asked whether it would not be possible, in view of the heavy expense of learning to fly, to increase the sum of £75 to be granted to each officer. He would also like to know what was considered by the Government to be an adequate number of aeroplanes.

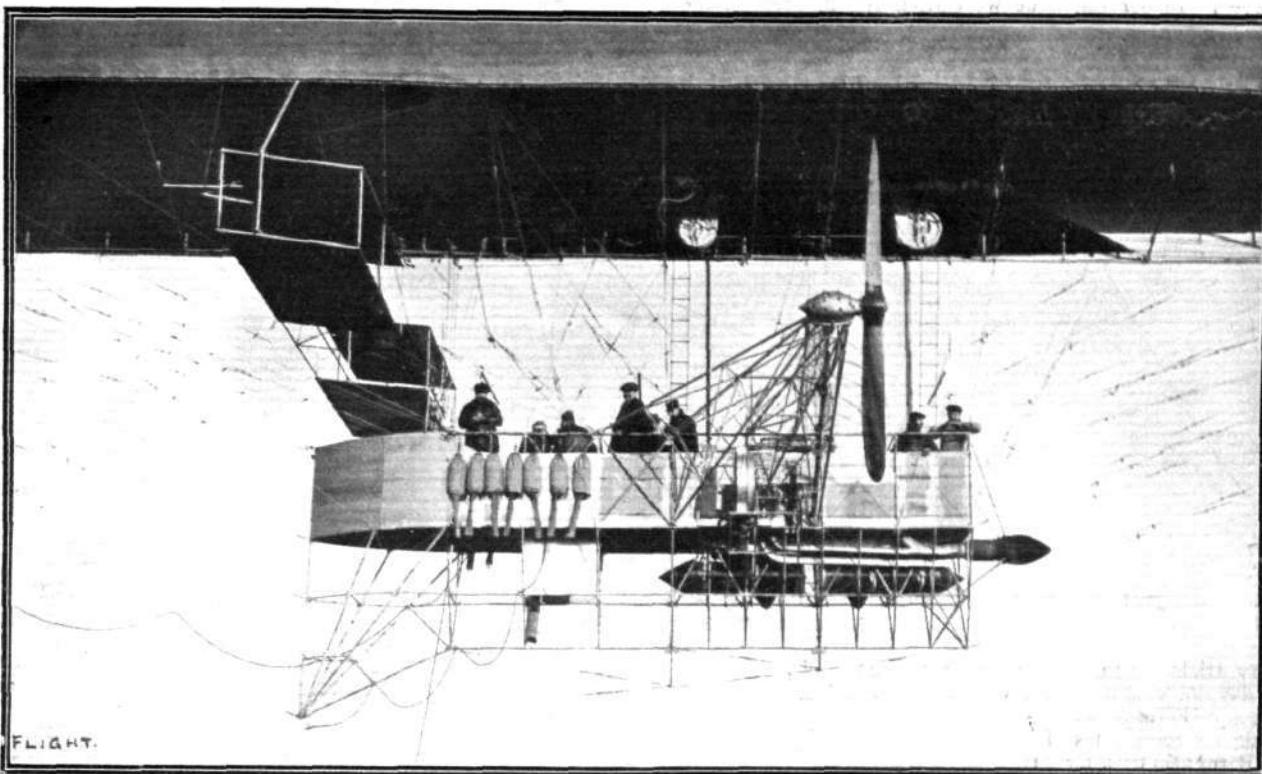
Colonel Seely said the present number of nineteen aeroplanes possessed by the Government would be greatly raised; but he could not give the exact total. They proposed to train at least 100 officers, and non-commissioned officers and men of other ranks would also be trained.

Sir H. Dalziel urged the Government to do their utmost to encourage civilian flyers, and to make it easy for them to give their services to their own country. At the present time they were being tempted by three or four foreign countries, and they should be allowed to offer their services to their own land first.



for 1912 the expenditure on military aviation will far exceed last year's figure of £320,000. It is stated that one item will be a sum of £28,000, which will be allocated for the remuneration of military aviators.

## AIRSHIP NEWS.



THE LATEST LEBAUDY MILITARY AIRSHIP AT MOISON, "LT. SELLE DE BEAUCHAMP."—This is of the type "Capitaine Marchal," with a length of 89 metres, two 80-h.p. Panhard motors, and has double rudders.

#### A New French Military Dirigible.

ON Sunday last the "Lieut. Selle de Beauchamp," a new Lebaudy dirigible, substantially the same in design as the "Capitaine Marchal," was out for the first time at Moisson, and was cruising above Bonnieres and Rosny for over an hour. It is named after one of the officers of the ill-fated "Republique." The cubic capacity of the envelope, which is 89 metres in length, is about 10,000 cubic metres.

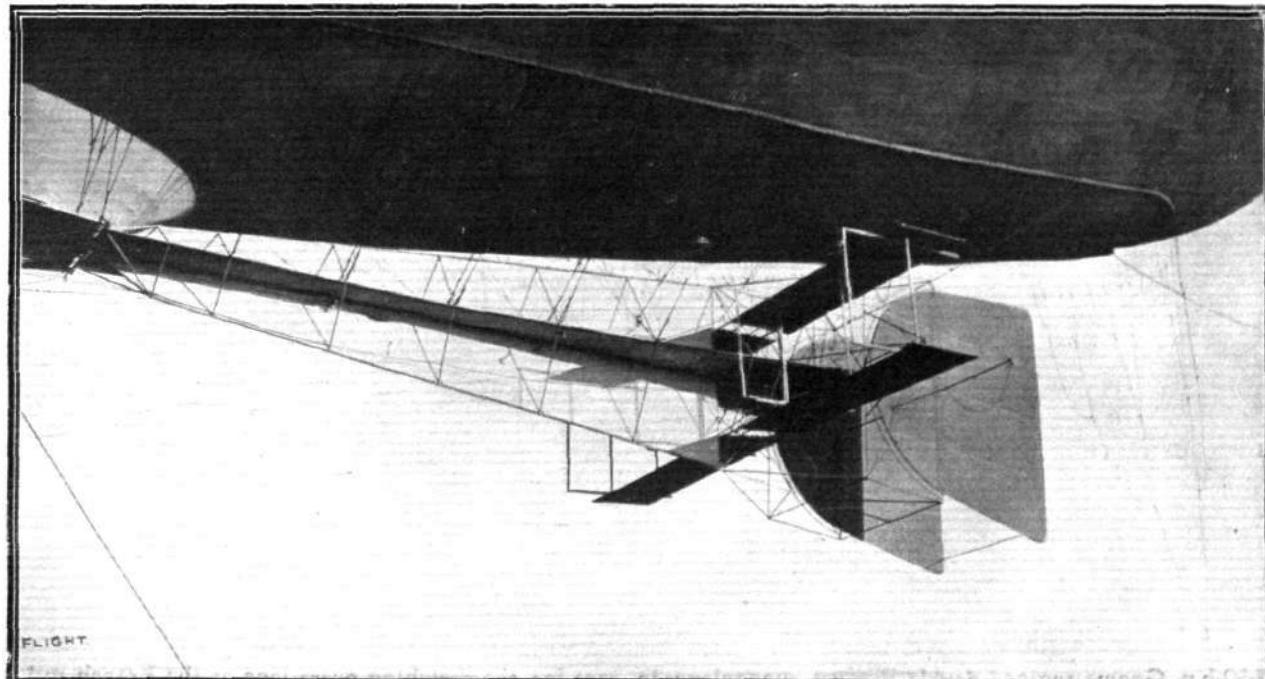
#### The "Schwaben" at Potsdam.

ON Saturday last the Zeppelin dirigible "Schwaben" was out for a short excursion over Berlin, and on Sunday it was taken

from Johannisthal to Potsdam so that the Kaiser might see its evolutions. Altogether the vessel was away from Johannisthal for six hours.

#### The New German Military Zeppelin.

As a result of its twenty hours' official duration test one or two slight modifications have been made to "L.Z. IX," and on the 27th ult. it passed the last tests imposed by the German Military authorities by remaining in the air for over eight hours at an altitude of 1,200 metres. Count Zeppelin has personally been in charge of the vessel for the official trials.

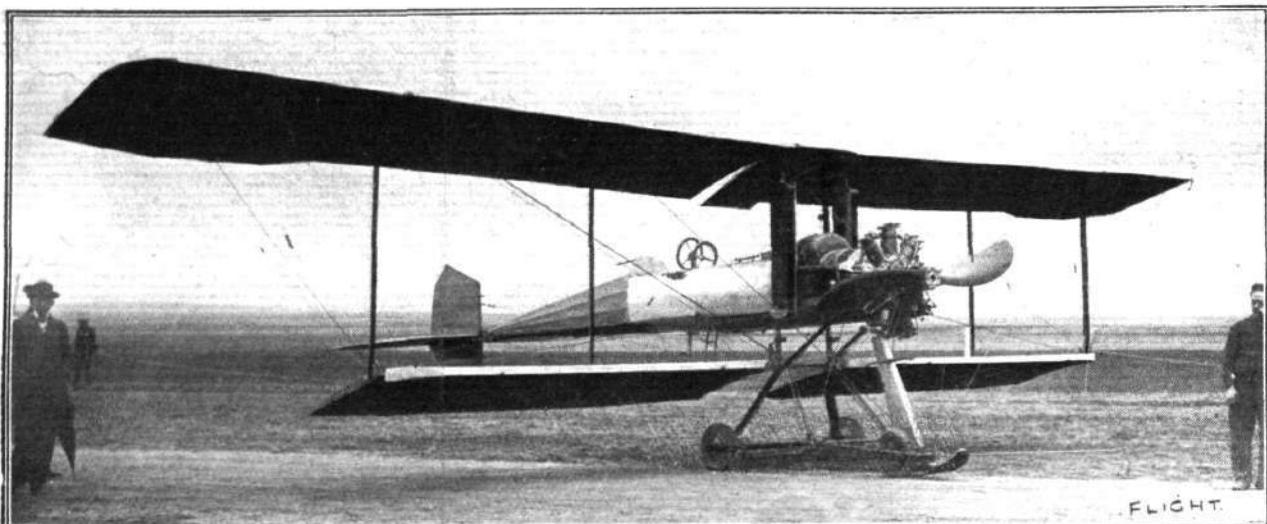


Steering planes and rudders of the new Lebaudy military airship, "Lt. Selle de Beauchamp."

## THE FRENCH MILITARY COMPETITIONS.

THE weather has again prevented very much being done during the past week. In our last issue we carried the progress of the

on the following day. On Friday there was an improvement in the weather, and several machines were brought out for their



Double Breguet monoplane, fitted with 110-h.p. Salmson motor (Canton-Unne system) at the French military tests at Rheims.

preliminary trials up to the doings on the 23rd ult. On the following day the wind prevented very much work, although Renaux on the Maurice Farman successfully made his second test for height. Barra also tried for his second height test, but was not successful, while Gaubert on an Astra-Wright biplane and Desparmet on a Blériot tried for the landing tests at Montcornet, but both had mishaps in restarting. All the Breguet machines were out practising, as also was Dubreuil on the Hanriot monoplane. The latter was landing on account of the wind when he was caught by a gust and very nearly capsized, but, fortunately, no worse damage was done than a twisted wheel and the breaking of a skid. On Wednesday wind and rain made flying impossible, and work was therefore confined to the hangars, and this state of affairs continued

official tests, but only one was successful, this being Prevost on his Deperdussin machine, who made his first landing in the stubble



THE LATEST TYPE OF MILITARY DEPERDUSSIN MONOPLANE.—This is one of the machines which has been participating in the Military Competition at Rheims, and is engined with a 100-h.p. Gnome.



A 140-h.p. Gnome-engined double Breguet monoplane in tow for the weighing operations at the French military tests at Rheims.

at Montcornet. Unfortunately the day was marred by a fatal accident to Desparmet, who, as a pilot at the Blériot School at Étampes has made an excellent name for himself as a clever pilot. He was flying a 140-h.p. machine in his first test to Montcornet, and just after passing Pont Givart, the machine appeared to side slip from a height of 200 metres. The pilot was thrown from the machine and sustained such severe injuries that his death must have been practically instantaneous. Of the others to try and make official tests, Vedrines was overtaken by the rain and had to abandon his attempt, while when it came to Wynmalen's turn on the Deperdussin, the wind was much too strong, and for this cause Frantz on the Savary, Colliex on the Voisin Canard, Moineau on the 140-h.p. Breguet and Debussy on the Breguet-Dansette-Gillet all had to give up their attempts after a preliminary round of the ground. Saturday was more favourable, and several were able to carry out their preliminary trials under official observation. Bregi on a Breguet machine was the first to get away in the morning to Montcornet, when he satisfactorily made his landings in the stubble field. He was followed by Prevost on the Deperdussin, who was successful in his second trial, and by Vedrines on the 80-h.p. Anzani-Deperdussin, which successfully made its first trial. Bregi and Debussy also attempted further trials but were stopped by the wind, and in the afternoon Barra on the Maurice Farman and Moineau on a Breguet each tried for height, but were not successful. Among the unofficial flights seen were those by Labouret on an Astra-Wright biplane with Herbster as a passenger, Goffin on the Astra triplane, Bouvier on the Goupy, Verrept on the Borel-Morane, Hanriot on a Hanriot, Debussy and Martin on Breguets, Frantz on a Savary,

and Wynmalen on a Deperdussin. Sunday was a splendid day, and full advantage was taken of it by several of the competitors, so that at the end of the day ten machines had made official tests. Prevost started early by finishing off his landing tests, and Bregi followed with his second test, landing in the long grass at Montcornet, while Frantz made his third landing test and Vedrines his second and third, doing one in the morning and the other in the afternoon. Gugenheim, who had received permission to make a fresh start on his Henry Farman, also went over to Montcornet and passed the first test. In the afternoon Prevost went to Mourmelon and back, his speed during the 36 minutes trip averaging 108 k.p.h. Frantz also succeeded in making the speed test, while Moineau passed both tests for altitude, so that by the end of the day there were five machines which had fully qualified, as the Commission decided to accept one of the height tests made by Barra which had been in dispute.

The successful competitors were Moineau, 100-h.p. Gnome-Breguet; Renaux, 75-h.p. Renault-Maurice-Farman biplane; Barra, 75-h.p. Renault-Maurice-Farman biplane; Fischer, 70-h.p. Gnome, Henry Farman biplane, and Weymann on a 100-h.p. Gnome Nieuport. On Monday the wind made flying impossible, in addition to which the atmosphere was bitterly cold, altogether a miserable day. There was only one flight, that of Didier on the Farman with Doutre stabiliser.

Tuesday was better for flying, and as it was the last day of the preliminary contest several competitors made determined efforts to complete the tests. Frantz made his two altitude trials, as also did Prevost, while Vedrines did both altitude and speed tests. Thus three more qualified, making the total number to survive the preliminary tests eight.



## AIR EDDIES.

HAVING completed the biplane which he is taking with him to South Africa, Compton Paterson intends to construct, during the period that elapses before his departure, on the 11th, a new miniature passenger-carrying machine, the chief feature of which will be its extreme portability.

Such a display of energy is quite typical of the vigorous Paterson!

Apart from the fact that the machine will be an extension biplane of 30 ft. span, and 4 ft. 6 ins. gap, and that only 30 wire strainers will be used in the whole construction, particulars are not at present available. However, we shall probably all have the opportunity of seeing this interesting machine at the next Olympia Aero Exhibition.

Johnstone, who, before joining the aeroplane section of Messrs. Vickers, Ltd., was noted for his good flying on a Howard-Wright biplane at Brooklands, is at present graduating at the R.E.P. school at Buc under the tutorship of Gibert. It will be remembered that he was flying as passenger with Fisher when the latter met with the accident from which he is yet suffering.

Salmet, on his Gnome Blériot at Hendon, has of late been carrying out tests with Lorenzen propellers, and I have it on his authority that he has obtained a marked improvement in thrust by their use. Mr. Lorenzen is a firm believer in the theory that, at least in high speed propellers, the partial vacuum in front of the revolving propeller is much more effective for the purpose of propulsion than is the region of compression in its wake.

I hear that Maurice Tabuteau has been engaged to carry out the preliminary tests on the new all-metal monoplane that Léon Morane is producing in collaboration with Saulnier. If there is any truth in the statement, it seems as though the Borel firm have lost even another of their valuable assets.

Hubert is still steadily improving, and by the time these lines appear in print his left leg should be out of splints. When I called to see him the other day he was making himself busy with needle and thread sewing and stuffing pads for the use of his fellow patients.

Although the world's altitude record, now standing at 13,000 ft. to the credit of Garros and the Blériot monoplane, will admittedly take some improving upon, it is clear that at least two noted French pilots are making every effort to become proud possessors of this

valuable *cachet*. Verrept has for some time past been practising at La Vidamée aerodrome on a Borel monoplane especially constructed for climbing. Legagneux, too, who has already held the honours, is making a determined attempt to regain them on a Blériot.

The new Valkyrie biplane, which Mr. Barber has under construction at his works at Hendon, is gradually taking form. The fuselage is completed and the *cellule* is ready for assembling. As for its landing gear, the characteristic "Valkyrie" chassis will give place to one of a modified and strengthened Blériot type.

The Indian aero motor, manufactured by the Hende Manufacturing Co., bears an almost exact resemblance to the 50-h.p. Gnome rotary motor. The chief innovation, undoubtedly a very excellent one, is that the whole of the cylinder head is removable together with the exhaust valve in one unit. By this means the piston and the automatic inlet valve can be removed without the necessity of dismantling the motor.

Aviators will no doubt welcome any method of cleaning an engine which will not necessitate dismantling it. To obviate this bugbear Messrs. Itala, Ltd., of Weybridge, have originated a method by which the carbon may be removed by the application of a jet of oxygen which is directed through the sparking-plug hole on to the deposit after the latter has previously been rendered incandescent. They claim that the method does not in any way injure the motor, and that every trace of deposit can be removed from the whole of the seven cylinders within an hour.

No doubt owing to the enthusiasm engendered by the fact that Compton Paterson has been constructing his biplane at Messrs. Lawton's motor body works at Cricklewood, Mr. Lawton Goodman, of that firm, is proposing to construct machines on a fairly large scale. They certainly should meet with every success in their venture, as their works are replete with that wood-working machinery which makes for rapid and economical production. It is quite on the *tapis* that Messrs. Lawton will exhibit the new Paterson baby biplane at the forthcoming Aero Show.

Saw Hucks in town last week, and he kindly explained that the success of his lectures was due to the fact that, as his audience persistently forwarded such questions as "Which end goes first?" "Does it all go up together?" and "What do you feed it on?" they did not need great oratorical exertions to convince them.

"OISEAU BLEU."



# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 31st October, 1911, when there were present :—Mr. R. W. Wallace, K.C., in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Prof. A. K. Huntington, Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, and Harold E. Perrin, Secretary.

**New Member.**—The following new member was elected :—

Ernest Rosenheim.

**Aviator's Certificate.**—The following aviator's certificate was granted :—

151. Frank Martin Ballard (Herbert-Spencer biplane, Brooklands) (subject to permission of Aero Club of America).

[In the official notices of last week, the name of Lieut. H. A. Williamson, R.N., was included amongst the certificates granted. This was in error.—H. E. PERRIN.]

**F.A.I. Regulations.**—The following Sub-Committee was appointed to go through the revised regulations, which will be considered at the forthcoming Conference :—

Col. H. C. L. Holden, C.B., R.A., F.R.S., Prof. A. K. Huntington, J. T. C. Moore-Brabazon, and Mervyn O'Gorman.

## British Empire Michelin Cup.

The competition for this year closed on Tuesday last, the 31st ult. On Friday, the 27th ult., S. F. Cody, after doing about 160 miles, was obliged to land owing to a broken wire. On the 29th the weather was favourable, and many attempts were made at Brooklands, Salisbury Plain, and Laffan's Plain. S. F. Cody, however, was the only competitor to complete the minimum distance of 250 miles. The exact distance accomplished by Mr. Cody was 261½ miles. The Royal Aero Club will consider the observers' certificates on Tuesday next, when the award will be made.

## Annual Dinner.

The annual dinner of the Royal Aero Club will be held in London during the early part of December. A Sub-Committee has been appointed to carry out the arrangements, and the place and date will be announced at the earliest possible moment.



## PROGRESS OF FLIGHT ABOUT THE COUNTRY.

**NOTE.**—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

### Aberdeen Aero Club.

A MEETING of above club was held in the Trades Hall, Aberdeen, on Saturday last.

Various subjects were discussed and competitions arranged. The following office-bearers were elected :—

President : Mr. W. Anderson.

Vice-President : Mr. S. Gray.

Secretary and Treasurer : Mr. A. Sefton.

Distance and duration competitions were arranged to take place to-day (Saturday), when several prizes will be offered. Accessory catalogues will be thankfully received by the Secretary.

### Birmingham Aero Club (62, ALBION STREET).

At a general meeting held at the Colonnade Hotel, 95, New Street, Birmingham, Mr. E. Trykle, 9, Belgrave Road, was elected subscription secretary, and Mr. G. Haddon Wood, Press Steward.

During the last month the club has been very active on the ground at Billesley Farm, King's Heath, where a large shed, large enough for the construction of any glider aeroplane any member is likely to build, has been erected and a sign put up.

Some splendid towed flights have been obtained with Mr. R. Platt's glider, and last week-end it was converted into a biplane glider. With a fairly strong wind blowing, it was several times got up to a height of 33 feet, the full length of the ropes, and glided for a distance of about 100

yards each time. Mr. R. Platts is now well on the way with the construction of a power-driven moonplane, which he hopes to have completed before Christmas.

The championship of the Midlands was flown on Saturday, October 7th, and as was expected, the Senior Championship was won by Mr. E. Trykle, with 80½ secs. Master Purser won the Junior Championship, with 35 secs., Master Stamps who was second, with 32 secs., having some hard luck, as previously he had obtained a flight of 70 secs. duration.

While giving an exhibition with his model at Tamworth, Mr. E. Trykle obtained a flight of 92 secs. duration. Mr. Trykle is willing to give full particulars of his model to any member of the club and will give them every help.

### Blackheath Aero Club (5, LIMESFORD ROAD, NUNHEAD, S.E.).

BRILLIANT weather favoured the two week-end meetings of the B.Ae.C., and a good number of members turned up to compete for the prizes offered by Mr. Rippon, Senr. The "Distance" event was won by Mr. Clark's "A.B.C." No. 46, which flew a distance of 914 feet, Mr. L. Brough being second with 436 feet. All the competitors suffered owing to their models "circling."

At the second meeting the club held a "Point to point" Race. In this competition members had to fly their machines right across the Lee Aerodrome and then through some goal posts, entering from the left, and great excitement was caused when models flew either round the posts or just over them, so that the competitors had to fly their machines

back again before they could go through from the proper side. The member who achieved the object in the least number of flights was the winner. Result: Mr. L. Brough, 1st; Mr. A. Rippon, Junr., 2nd.

Members hope to give exhibitions of model-flying at several large open spaces in South London during the next few weeks and so endeavour to interest more people in model aviation. Week-end meetings will be held at Kidbrooke and Lee as usual.

#### Liverpool Model Aero Club (39, BROOK ROAD, BOOTLE).

OWING to the inclement weather, no flying was done on the 21st at the club grounds, but on the 28th a very fine meeting was held, thirteen models being present. Ledward, flying in usual splendid form, with a twin screw model, gained his certificate with a pretty circle, finishing the tests. S. Malins and A. G. Pugh both did flights of over 400 feet with twin screw models, the latter flying at a height of about 50 feet, nearly all the way. A tractor screw biplane, owned by the Secretary, did not fly at all, and the single screw monoplanes only covered a short distance. Harley, with a twin screw monoplane, did very well indeed, and J. Malins and Huntington have models which only need tuning up slightly to do something "big."

A. G. Pugh has offered a 12 inch carved propeller for the first member to reach 1,000 feet in a straight line by November 30th next, inclusive. No entry fees. More members are required, and anyone interested should be on the ground any fine Saturday or communicate with the Secretary.

Usual meeting, next Saturday at 3 o'clock.

#### Manchester Model AeC. (40, BIGNOR STREET, CHEETHAM).

THE club is making steady progress and many members are joining each week. On Saturday last, there was a larger gathering than usual at the Manchester Aerodrome, Trafford Park, when Mr. Williamson put up six more flights, averaging 789 ft. for the Aggregate Competition in which he is still leading. Mr. Watson qualified for his 3rd class certificate, his best flight being 648 ft. The wonderful "Redivalls" was started edge-on in the customary manner and every time righted itself without any hesitation. The Committee want to arrange lectures and debates during the winter season, and would therefore like to have the names of members who are willing to give papers or open discussions. The local Y.M.C.A. are having a lecture by Miss Gertrude Bacon on flying machines, illustrated by the cinematograph, on Wednesday, Nov. 8th. This club has secured a special concession for its members. Tickets will be sold at the usual weekly meeting to-day (Saturday) 2.30 p.m. at the Aerodrome, Trafford Park.

#### Paddington Aero Club (2, EDBROOKE ROAD, PADDINGTON).

AT a meeting held on Wednesday, October 25th, the above club was re-formed on improved lines. It will in future be run in conjunction with the Parkside Aero Club, whose private flying ground at Sudbury, as well as the glider, will be at the members' disposal. A handy workshop off Harrow Road, Paddington, is also provided. The subscription has been fixed at 1s. per month, a modest sum for the advantages to be obtained. Competitions will be arranged in due course for model aeroplanes, and kite-flying will also be a feature of the club. A good number of members have already been enrolled, and anyone interested in the above scheme is asked to write to the Hon. Secretary, Mr. H. Hurlin, who will be pleased to give further information.

#### Palmer's Green & District Model Ae.C. (15, MOFFAT RD., N.).

LAST Saturday brought beautiful weather, and both members and spectators turned up in force at the Powys Lane Aerodrome.

Mr. Brown, who had attached a chassis to his machine, retired to an adjoining roadway to test its rising capabilities, but his actions were considerably hampered by a small crowd of interested spectators, who formed a circle round model and owner. However, after one or two unsuccessful attempts to clear obstacles and to steer through eye witnesses, his model ran for 15 feet, rose gracefully and sailed steadily over the main mass of onlookers, covering about 500 feet before alighting.

Mr. Trollope's "Brown" monoplane made some fine flights, one of which lasted 60 secs. His machine flew high and was very stable. Its career was temporarily marred, unfortunately, by the drenching it received through falling into the brook which runs through the aerodrome. Some speedy flights were made by Mr. R. L. Rogers' machine,

which flew unfalteringly and kept at a constant height. Mr. A. Rogers, later in the afternoon, was also responsible for some good flying.

Up to now, two  $\frac{1}{2}$ -mile flights have been officially recorded, namely, those of Messrs. E. R. Brown and R. L. Rogers, on October 9th and October 28th respectively. Both members use models of their own make and design.

#### St. Mary's Model Aero Club, Portsmouth.

PERMISSION having been obtained to use the Drill Field at Hilsea, a very successful meeting was held last Saturday. There was a good attendance of members, and each had at least one model. A strong wind was blowing, but some very excellent flying was witnessed, and the club's former records were easily beaten. All machines are members' own design and construction. A meeting will be held every Saturday, weather permitting, meeting place being the Vicarage, at 2.30 p.m.

The next ordinary meeting is on November 8th (Wednesday) at 8.30 p.m. Will members please make a special point of putting in an appearance as some very important business has to be transacted.

#### Scottish Ae.S. (Model Aero Club) (6, MCLELLAN ST., GOVAN).

THE club held a model meeting at Barrhead last Saturday, when over a dozen machines took part.

Mr. Donaldson's monoplane had the best duration flight with 45 secs. Mr. J. S. Gordon was next with 42 secs. There were two biplanes at the meeting, both of which flew excellently. During the afternoon the school Blériot, belonging to the Scottish Aviation Company, was brought out for a short "airing," and several of the members assisted in holding her in while starting off. Owing to the failing light, meetings at Barrhead will only be held on special occasions, which will be notified in FLIGHT. The members of the club do not by any means forsake the scientific side of model making, and several new machines of somewhat original design are under construction, including one with twin four-bladed propellers, which will be out for trials in a week or so. The committee hopes to announce soon the first of the lectures which are now being arranged.

Members of the committee are requested to be in attendance at the Aviation Pavilion in the Exhibition to-night (Saturday).

#### Stony Stratford and District Kite and Model Aero Club.

A PUBLIC meeting was held on Thursday last, October 26th, in the Public Hall, Stony Stratford, to consider the question of forming an association for the study and flight of model aeroplanes. Mr. J. J. Atkinson, of Cosgrove Priory, presided, and after interesting speeches and considerable discussion, it was resolved to form the "Stony Stratford and District Kite and Model Aeroplane Club," and about twenty members were enrolled.

The Chairman kindly consented to be elected President, and Mr. W. Elmes generously offered the use of a large field for the members' experiments. Mr. O. Hamilton, Junr., was elected Secretary and was instructed to make arrangements for another meeting, which is to be held on November 9th at 8 o'clock.

#### Yorkshire Ae.C. (Model Section) (5A, HULLAND ST., LEEDS).

COMPETITION for the Thornton Medal will be held to-day (Saturday) at Carlton Hill Aerodrome, at 3.30 prompt. Entrance fee, 2d. per model. No restrictions as to size, weight, &c. Hearty invitation to all.

#### Bristol Model Flying.

A MODEL-FLYING meeting will be held on the Downs (sea walls) at 3.30 p.m. to-day (Saturday). It is hoped that as many as can will come, as, although the elements are generally antagonistic, the flying is always interesting and varied.

#### New Model Aero Clubs.

It is proposed to form a model aero club for Dulwich and district, and the arrangements are in the hands of Mr. A. W. Myles, Eastfield Villa, 130, Friern Road, Dulwich, S.E.

Mr. Alex. Fleet, of 201, Black Road, Macclesfield, is anxious to form a club in that district, and would be pleased to hear from anyone interested. Incidentally with a view to rousing interest in model aviation locally, he is willing to arrange a match with model aeroplanes, either for distance or duration, with any other enthusiast in the neighbourhood.

## FROM THE BRITISH

Royal Aero Club Flying Ground, Eastchurch.

INTEREST centred on Sunday around the trail of another new twin-engine machine which has just been completed in the shops of Messrs. Short Bros., the design of which is included amongst their patents for twin-engine system machines.

No doubt the method of employing the two propellers will be largely criticised, as it has always been an accepted theory that one propeller working directly in the wake of another is not an ideal and efficient arrangement; but, so confident has Mr. H. L. Short been that this system could be made quite efficient and simple, that the present machine was built, and on its first trials fully justified the confidence which the designer had placed in it.

The machine is fitted with two 50-h.p. Gnomes, one behind the main planes in the centre line of the machine, with a single propeller, and the other engine directly at the back of the planes on the same axial line as the front engine, also fitted with a single propeller. The nacelle is situated between the two engines and is arranged with thwartship seats and dashboard, and dual control throughout. The engines turn in opposite directions, so that there is no gyroscopic action and no engine torque, as one engine balances the other when both are running at the same speed and give off the same horse-power. The machine flies easily with either engine.

So great has been the success of twin-engine drives, both with three screws, and the latest with two screws, that Messrs. Short Bros. are now commencing to build a machine of 250-h.p., which will have four propellers.

Upon the dashboard of the machine now under review are conveniently arranged a complete set of instruments such as an aviator requires, which include a speed indicator for each engine and an aneroid barometer, the latter specially made for aviation work by Short Bros. Another new feature introduced by the makers is in regard to the petrol supply, which is controlled by a special cock, which in turn is connected to an indicator finger working against a graduated dial, thus enabling the tap to be set to the most suitable opening and the exact position noted—a detail of considerable importance in relation to Gnome engines. As before mentioned, the machine is fitted with dual control, so that it can be operated from either seat, and by a neat arrangement the switches and throttles of the two engines can be

## FLYING GROUNDS.

worked either separately or both at once by a single movement of the hand, as occasion requires.

Mr. Frank McClean, who piloted the machine on its first run, did not attempt any preliminary ground rolling, but took the machine straight into the air and made a lap of the aerodrome at a height of about 100 feet. On descending he expressed great satisfaction at the behaviour of the machine, which flew extremely well and at a great speed. During the afternoon he made several extended flights, taking in turn Lieut. Samson, R.N., Lieut. H. V. Gerrard (brother of Capt. Gerrard, the aviator) and Mr. J. L. Travers, of Messrs. Short Bros., as passengers. For a final flight, taking with him Lieut. Gregory, R.N., as passenger, Mr. McClean made a long tour of the island, passing over Queenborough and Sheerness, keeping at an altitude of about 600 feet the whole way. The machine exhibited splendid climbing powers, rising with unusual rapidity.

Two other machines of original design, the Dunne biplane and the Jezzi biplane, were also tried in the afternoon.

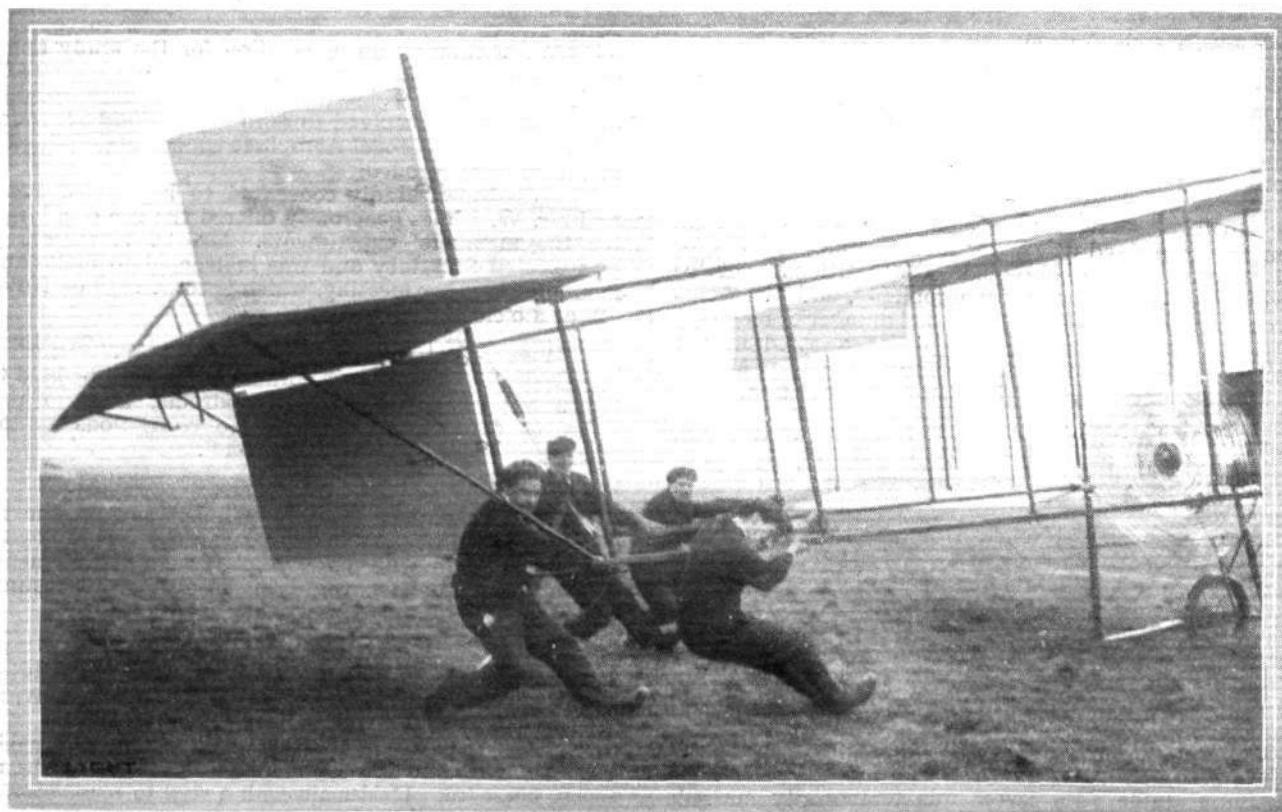
The first-named is Lieut. Dunne's original machine, which was first constructed at Leysdown; since its last trials, however, it has been entirely reconstructed, and it is understood a considerable saving in weight has been effected. Several short flights were made during the afternoon, Lieut. Dunne piloting.

Late in the afternoon Mr. Jezzi tried his interesting little biplane, which, since its last appearance, has been fitted with a more suitable propeller. The machine exhibited great steadiness and flew several laps of the ground in good style. Mr. Jezzi is now engaged in the construction of a new propeller to his own design, and when this is completed he expects to get some 60 miles an hour out of his machine, which is already very fast in the air.

On Tuesday afternoon Mr. Valentine paid us a flying visit, and although there was an extremely disagreeable wind he went for a short flight on his Deperdussin monoplane. He was barely on *terra firma* again when a rain storm broke upon us.

## Brooklands Aerodrome.

THE past week has been one of many disappointments to British Michelin aspirants. Nevertheless they have really only had themselves to blame, and thereby I liken them to



"Flight" Copyright.

Hanging on to the tail of a Short biplane before a trial at the Royal Aero Club's flying grounds at Eastchurch.

the foolish virgins who tried to buy oil only to discover that it was early-closing day. Had they started preparing two months ago they might have overcome their difficulties in time to put up a good show. Anyway, the prize goes to the best man, and I do not know of any one who deserved it more than Cody, so good luck to him. Wednesday, though windy at times, calmed down now and again and allowed some flying to be done. Raynham, on the Avro, made a few circuits, and, later on, straight flights, testing new propeller and preparatory for the Michelin; Bell was out on the new Deperdussin, flying a few circuits to see if the planes were quite true, and Wilkins made some good straight flights on the *brevet* machine. Mrs. Hewlett flew for several circuits in excellent style, afterwards handing the machine over to her son, Francis Hewlett, who flew some good straight flights. Spencer was out with his pupil, Frank Ballard. The latter has made very good progress indeed and executed some excellent figures of eight at about 200 feet. Rippin was out on the Hanriot, making straight flights in good style, though the engine was not pulling very well. The Bristol biplane, piloted by Fleming, was out for a few circuits, Lieut. Harford then took the helm and succeeded in making some circuits and figures of eight in capital style.

Thursday was a good old-fashioned October day, with the frost lying thick on the ground and the air perfectly still. The star performance was Bell's flight at 1,500 feet on the Deperdussin two-seater with Baldwin as passenger. He flew for about half an hour and finished up with a splendid *vol plane*. Garne, when doing circuits on the pupils' 'bus, had a sideslip at the shed turn and completely atomised the machine. It was hardly worth collecting except for the engine and strainers. He himself was not hurt a bit, being thrown clear. Raynham started for the Michelin, but after getting through a few circuits he came down, as the carburettor had frozen up, causing the engine to starve. Ballard gave an excellent exhibition of figures of eight, banking at the turns in quite Spencer-esque style.

Francis Hewlett was flying this time, doing turns and runs. Pizey, on the Bristol, flew for some time and then took up as passenger Mr. Roberts for a few circuits. Afterwards Mr. Robert made some long hops. Harford started for his ticket, and after doing a few eights the engine commenced missing badly and he was forced to descend. Fleming then took up Mr. Roberts as passenger.

Friday was also a glorious morning, so Raynham again tried for the Michelin. He did a complete circuit very well, and then decided to start in earnest. At the second circuit, the carburettor, despite desperate efforts to warm it, froze again and he descended in the sewage farm. He did not come down with much of a bump, but owing to the recent rains the sewage farm was almost under water and very soft, so the machine gently turned over till the tail was nearly touching the ground or rather mud. Raynham just fell out of the seat, which was upside down, into one of the irrigation channels about 18 ins. deep and all we could see was a leg waving in the air. However, he managed to swim to the bank, and all he suffered was a soaking.

Ballard, flying excellently on the Spencer biplane, passed the tests for his pilot's certificate, landing quite close to the observers. Francis Hewlett took a few circuits very low, following the style of his instructor, Blondeau. Wilkins, Baldwin and Sabelli, of the Deperdussin school, were out on the taxi, making straight flights. Fleming went up for a few circuits and then took up as passenger R. J. M. Milner, R.F.A. He was very pleased with his experience and expressed his intention of joining the Bristol School at an early date.

Saturday was very windy and the only flyers out were Kemp, who made some straight flights, and Fleming, on the Bristol.

Kemp started on Sunday for the Michelin on the Flanders monoplane and flew seventeen circuits in excellent style; but the pressure for the petrol was leaking so that he had to descend to have things fixed up. He started again later and flew for about an hour, when something else went wrong and he was forced to come down again. Very hard luck indeed, as the machine was lifting about 45 gallons of petrol.

Snowdon Smith, on his British-built Farman, was flying across country with a passenger and finished up with an excellent *vol plane*; Francis Hewlett was flying circuits, and Graham Wood was making straight flights. The Pashleys brought out their Humber monoplane, fitted with tank, for the Michelin, but after flying a few circuits, found

that the weight was too far forward and had to abandon the idea of further efforts.

Fleming flew a few circuits and then took Capt. Harrison and Mr. Roberts for flights. Lieut. Harford flew tests for his ticket, with the exception of altitude, and Harrison put up a couple of circuits.

Monday was a beastly day, very windy and raining. Fleming was the only one out and he did just one circuit before dark. Tuesday dawned fine and still and Kemp again started for the Michelin on the Horden. He flew strongly for a few circuits and then found that his oil circulation was wrong, so had to come down and gave up the idea of trying. Spencer, who had taken on the flying of the Howard Wright in the place of Longstaffe, did not seem to be able to get things going right and only made a few straight flights. Rippin made some straight flights at a good height on the Hanriot. Francis Hewlett flew some circuits on the Blondeau-Farman, and Fleming, with Roberts as passenger, made a few circuits, Roberts following with straights, Harrison finishing up with a couple of circuits.

#### Filey School (Blackburn Aeroplane Co.).

THE weather during last week was altogether much too stormy for flying, but on Wednesday Scott was out doing rolling practice, although he had to keep to a straight line on account of the wind. The school has been kept pretty busy getting Oxley's Michelin Cup machine ready. On Sunday morning Oxley had the machine out and from a preliminary run believes that he will be able to attain a speed of between 65 and 70 miles an hour, for which the Blackburn monoplane was designed. He intended to have a trial for the Michelin Cup in the afternoon, but the weather was much too rough and got worse instead of better, so that all thought of flying had to be abandoned.

#### Freshfield Aerodrome

MR. FENWICK was out on the new monoplane of Planes, Limited, for a trial trip on Thursday morning last week and got in the air for a short distance. He made rather a bad landing, damaging two struts, one skid and propeller, the wind being very gusty at the time. This machine, which it was hoped would compete for the British Michelin prize, is again ready for the air and hopes are high that very shortly there will be a good account of its flying to give. On Saturday last Mr. Pochin got in the air on his small biplane on three occasions for short distances, and as he has only had a few rolls on it so far, his performance must be regarded as distinctly good. His new machine is to be completed shortly. Mr. Higginbotham is giving his machine a thorough overhaul, putting quite a lot of new wood in and re-covering it, so that it will be about a month before it is again ready for the air.

#### Lanark Aerodrome (Lanark, N.B.).

ON Saturday afternoon last Mr. Ewen made a fine flight to Edinburgh on his Deperdussin monoplane. Leaving the Lanark aerodrome at 12 mins to 4 and rising rapidly to a height of well over 1,000 feet, he disappeared in the direction of Carstairs. Here he picked up the Caledonian Railway, which he followed to Edinburgh, landing safely at Gorgie Farm, which is on the outskirts of the city, at 4.23. The distance is roughly about 30 miles. The Deperdussin behaved splendidly and Mr. Ewen landed in the farm grounds without a mishap, and was hospitably received by the Rev. Father Forsyth. This performance is of considerable merit, considering the hilly country which had to be flown over and that the Anzani engine was only 28-32-h.p.

His flight was witnessed by thousands of people along the route, and he was easily identified by the word "Ewen," which was painted in large letters under the wings.

#### Liverpool Aviation School, Sandheys Avenue, Waterloo.

THERE is little work to record for the past week owing to the continual stormy weather. Mr. Hardman, however, was out rolling for a short time on Saturday afternoon, and succeeded in making two short flights of 40 or 50 yards each, only rising a few feet from the ground and landing quite true and in such style as to give promise that he will shortly be making extended straight flights.

#### London Aerodrome, Collindale Avenue, Hendon.

**Blériot School.**—On Monday, Tuesday and Wednesday morning last week, most of the pupils of the Blériot School were practising, and on the Wednesday afternoon Mr. Driver

took out for the first time his new 50-h.p. Gnome-Blériot, which he will be using in Africa, and made two very good flights; meanwhile Mr. Hamel was flying the new passenger machine on which he crossed the Channel, with M. Norbert Chereau as passenger, until it was quite dark, the lights of London seen from above making a most impressive sight.

Thursday morning was again a good time for the pupils, but wind and rain came in the afternoon and stopped all work. On Friday, although still rather windy, Mr. Driver made his first cross-county flight on his Blériot, accompanied by Mr. Salmet, his instructor, also on his 50-h.p. Gnome.

Saturday was quite a show day at the Blériot School. Mr. Hamel, on the Blériot two-seater, was taking up passengers all the afternoon, amongst them being Messrs. Ernest Hardy, C. D. Forbes, Welburn, R. Sacchi, &c., while M. Salmet and Mr. Driver were making high flights, M. Salmet attaining 3,500 feet and going right away to the west of Ealing.

Amongst the visitors present on the ground were Mr. Tom Sopwith, just returned from America, where he obtained so many successes on his 70-h.p. tandem Blériot, Mr. Sassoon, Mr. Spottiswoode, Mr. G. C. Colmore, Mr. F. Gilby, &c.

**Grahame-White School.**—On Wednesday afternoon of last week Lieut. Parke brought out the old Farman machine that accompanied Mr. Grahame-White in his last American tour and mounting to 500 feet flew across country in the direction of Harrow Hill. Returning after an absence of half an hour, he took up several passengers in succession, including the pupil Mr. Fowler, who was carried for eight circuits. On the following day Mr. Gates had the E.N.V. school "bus" out in the morning for straight flight practice. A gale was blowing all Friday, putting all thoughts of flying out of the question. The only machine that emerged from the sheds the whole day was Grahame-White's Gordon Bennett winning 100-h.p. Gnome-Blériot, which was under test at the hands of the engineers. Although Saturday afternoon was by no means ideal for flying, there being a gusty wind, varying from 18 to 24 miles per hour, the inclement conditions did not deter Lieut. Parke from taking out the Gnome-Farman and flying for the space of a quarter of an hour, banking heavily at the turns. During the afternoon the school had a notable visitor in the person of Mr. Tom Sopwith, who, fresh from his long tour in America, could not resist sampling the local air on the Gnome-Farman. Descending after a flight of five circuits, he took up Lieut. Parke and during the ensuing flights performed his turns with a banking that was more reminiscent of the Wright biplane than of a Farman. Following this flight, Mr. Sopwith gave *le baptême de l'air* to Mr. James Cooke, who, despite his 70 years, was as enthusiastic as would have been expected of one of more youthful blood. Concluding the day's flying, Lieut. Parke gave flights to many lady passengers.

On the following day Mr. Sopwith paid another visit to the aerodrome, and notwithstanding the treacherous 20 mile-an-hour wind, made two flights, during the second of which he took up a friend as passenger.

**Valkyrie School.**—On Wednesday afternoon last week Capt. Loraine brought out the school machine and circled the aerodrome for 10 mins. and in spite of a slight breeze flew very steadily and landed perfectly. Then Mr. Barber set out on Valkyrie "10" and rose to a great height. He remained in the air for 20 mins., carrying out many effective evolutions; the flight terminated with a pretty spiral *vol plané*. Capt. Loraine then occupied the passenger seat, and Mr. Barber again ascended to a good height, making several circuits of the aerodrome. Towards dusk Mr. Barber flew the same machine again, putting up a flight of 20 mins. duration. An average altitude of 500 feet was maintained and a clever landing, *en vol plané*, accomplished immediately in front of the hangars.

Thursday was windy and unsuitable for flying. On Friday morning Capt. Loraine was out on the school machine at 7 a.m. He made two circuits and a figure of eight before descending. His *vol plané* descents are quite expert now. The school pilot put up a pretty flight on Valkyrie "10" at an altitude of 400 feet., and remained in the air for a quarter of an hour. The wind soon became puffy, but not before Capt. Loraine had made several short flights on the Gnome-engined Valkyrie racer. He handled his new mount splendidly, and was delighted with the fast machine.

On Saturday heavy fog prevented tuition before 8 a.m., but later it cleared off sufficiently to allow Mr. Barber to bring out the Gnome-engined Valkyrie "10." After com-

pleting several circuits he descended and handed over this machine to Capt. Loraine, who made a very successful flight of three or four circuits of the aerodrome, eventually landing *en vol plané* with his engine completely stopped. On Monday a gale put all thoughts of flying out of the question.

Early on Tuesday morning Chambers put in some good practice on the school machine; at the same time Capt. Loraine was out on the Valkyrie racer, fitted with 50-hp. Gnome, flying very well. Mr. Barber also made some short flights on Valkyrie "10," before the wind rose. The latest pupil to join the school is Mr. E. Busk, of Rudgwick, Sussex.

#### Portholme Aerodrome, Huntingdon.

TUESDAY last week the school was busy, Mr. W. Roberts-Bruce making straight flights and getting in part turns. Wednesday saw a repetition of the work.

Mr. Moorhouse, who had left Hendon at 3.33 p.m., landed at Huntingdon at 4.33 p.m., from an altitude of 3,000 feet.

Flight took place from the aerodrome over the surrounding country on Thursday, the altitude reached being 4,000 feet. The wind was very unsettled, and at one time, over Godmanchester, the machine practically stood still in the face of the wind. Mr. Moorhouse finally landed with a splendid *vol plané*. Later he was up again, for 20 mins., and landed at dusk; during the flight the machine rocking badly owing to the gusty wind.

#### Salisbury Plain.

Flying was entirely out of the question all day on Monday and Tuesday of last week, a violent wind prevailing, with torrential downpours at intervals.

The conditions were somewhat improved on Wednesday in the morning, and Gilmour was the first up on the single-seater, making a solo lasting 20 mins. Jullerot also made a solo, but decided that the conditions were not favourable enough to permit of like work by the pupils. Busteed took Mr. Dacre for a tuition flight.

In the afternoon Busteed ascended for a trial of the conditions. Prier did some remarkably fine performances on the new military monoplane, which were exceedingly gratifying, especially when it is borne in mind that the conditions were anything but favourable. His first flight was with Jullerot as passenger, when he ascended to a height of 1,000 feet in 6 mins. Baron Roenne was next taken up, and a height of 2,200 feet was reached in 14 mins., the 1,000 feet being attained in 5 mins. School work was then recommenced by Jullerot taking Lieut. Ashton, a new pupil, for his first flight, and afterwards ascending with Lieut. Head, who has also just joined the school. Lieut. Joseph performed a very fine solo, as also did Mr. Mellersh. Lieut. Dacre then went for his first solo flight, during which he showed signs of having made very rapid progress. He landed very skilfully at Fargo. Jullerot took Busteed over to where Mr. Dacre's machine was and the instructor flew the machine back with his pupil as passenger. Gilmour made a solo on the military monoplane, making some fine turns.

Lieut. Joseph started things off on Thursday by making three consecutive solo flights, and the passing of the necessary tests for his *brevet* should easily take place at the next favourable opportunity. Mr. Dacre also made a solo, Mr. Mellersh following with two flights. This latter pupil, given suitable weather, should shortly qualify for his certificate. Busteed took Lieut. Head for a trip, afterwards ascending with Baron Roenne, reaching a height of 800 feet in each instance. Prier brought out the military monoplane, and, with Jullerot as passenger, obtained some excellent speed results. Afterwards Prier, with the mechanic Grabette, made a circuit, which brought the day's work to a close.

The conditions were fairly favourable on Friday and Busteed was the first up, taking Lieuts. Head and Ashton for tuition flights. Lieut. Joseph and Messrs. Mellersh and Dacre each made very fine solo flights. These flights were repeated in the evening, when Gilmour was first out on the military monoplane.

On Saturday no flying was possible until 4 o'clock, when Jullerot made a solo, and found weather conditions fairly good. Gilmour flew for about 20 mins. on the military monoplane, carrying a passenger, and frequently changed his altitude with remarkable skill. In the meantime, Jullerot had flown with Lieut. Head from the hangars to Flagstaff Hill. The day's work was concluded by Jullerot flying the machine back to the sheds.

## BRITISH NOTES OF THE WEEK.



A man-carrying monoplane designed and constructed in its entirety, including the propeller, by Mr. H. D. Crompton, of Walton-on-the-Hill. The engine, which is a 30-h.p. Alvaston, is slung underneath the main bearers, the pilot's seat being on the top. The span is 30 ft., the length 28 ft., main plane surface 160 sq. ft., and the weight 600 lbs. in flying order, including allowance for pilot. No aluminium is employed, all joints being made from sheet steel.

#### Mr. Cody's Fine Flight for the British Michelin.

A SPLENDID flight was made by Mr. Cody on Sunday last at Aldershot, with the object of placing the British Michelin Cup once again to his credit. A course of about 7 miles round had been laid down, and starting off from Laffan's Plain at 8 o'clock in the morning he continued on until he had been in the air for just over 5 hours, and by the time he decided to come down he had covered 26½ miles. On Mr. Cody descending from his machine, he was carried shoulder high to his hangar by the crowd which had gathered. On the previous Friday he covered a distance of 160 miles in just on 3 hours. When he started from Laffan's Plain there was a fog over the ground, and it seemed to make little difference to Mr. Cody, who kept flying steadily at a height of 800 feet until a broken wire rendered a descent advisable,

#### Mr. Pixton over the Nab Lightship.

ON Wednesday of last week Mr. Howard Pixton had his Bristol biplane out at Hayling Island, and after climbing to a good height, steered out over the water to the Nab Lightship. After circling above this he made his way back to the starting point and came down after being in the air just on an hour. The flight aroused a good deal of interest, and caused, as a consequence, a large concourse of visitors to make their way to the flying ground during the afternoon. Unfortunately the weather had changed for the worse, and only permitted a brief ascent to be made.

#### Mr. Hewitt at Rhyl.

ON his Blériot monoplane, Mr. Vivian Hewitt, on the 25th ult., was flying at Rhyl at a height of 1,500 feet, and after circling round the town went on to Rhudlan, some 4 miles away. There he flew round the ruins of the Castle,

and, passing Rhyl on the way back, landed without incident at his headquarters at Foryd Farm, after having been aloft for about 20 mins.

#### Aerial Post-Boxes for Sale.

SOME of our readers may be interested to hear that an unique souvenir of the aerial post may be obtained in the shape of one of the special post-boxes used during the time the flights took place. The price of these is two guineas each, and further particulars can be had from the secretaries to the Honorary Committee, Messrs. P. C. Button and Co., Ltd., General Buildings, Aldwych.

#### "Novavia" Varnish.

THE General Aviation Contractors, Ltd., of 30, Regent Street, have secured the exclusive British agency for the well-known "Novavia" varnish, as used by the leading aviation manufacturers, Vickers, Bristol, R.E.P., Morane, Caudron, Blériot, &c., for aeroplane work. Very great advantages are claimed for this varnish, the chief being as follows:—

It is water, oil and petrol proof.

Once the wings are varnished, the fabric will not relax in spite of heat, sun, humidity or rain.

The fabric is not spoiled by dirt from the motor, nor by most acids.

It is non-inflammable.

When soiled with mud or any other ingredients, if washed with soap and water the fabric will become as clean as before.

It strengthens the fabric (about 300 kilogs. per square metre).

For general use, "Novavia" varnish is made up in clear solution, but it can also be obtained in any colour without losing its advantages.

#### SCHOOL AERO CLUB NOTES.

By ROBERT P. GRIMMER, General Secretary, British Federation of School Aero Clubs.

IN reference to my recent remarks with regard to the expense of model flying, I have received quite a number of interesting letters from our members and others. Several correspondents state that while they do not consider that the sport is an expensive one if one commences operations with a tested and proved machine, they certainly find experimental work excessively costly. A Birmingham writer pathetically remarks that although he has been "at it" for nearly twelve months, the process is invariably the same. "All my spare time for weeks," he says, "is occupied with building a machine. At last it is finished and I go to fly it, and the first landing usually reduces my model to matchwood!"

Another correspondent writes, "It is all very well for you to be enthusiastic with your  $\frac{1}{2}$ -mile and  $\frac{1}{4}$ -mile flights, but what of me? My machines go in circles and whether launched in a calm or a gale, I cannot make them go straight. I spend all my pocket money in buying materials to build fresh machines, but they will go in circles." Yet a third says, "My models fly all right, but they end their career in trees, and I really cannot keep any machine more than a week or two." Others state that their rubber is always breaking and that they cannot keep the pitch in their propellers. And, most pathetic of all, two or three write to the effect that they have given up model-making in disgust

as they find it more expensive than anything else they have ever taken up.

And now for some advice. No model-maker is successful at the outset, and those who take up the sport must prove their enthusiasm, if they would succeed, by a certain measure of perseverance. Quarter-mile and  $\frac{1}{2}$ -mile flights, although they seem to be performed with comparative facility, are really the products of years of strenuous toil and indifference to disappointment and ridicule. Although no advocate of "copying," in the generally understood sense of the word, I strongly advise beginners to attend competitions where they can see really successful machines, and thus may be enabled to gather data which may be of invaluable use to them in their own work. Practically all the big model-making firms supply parcels of materials for building standard machines, and the experience gained by constructing one of these models often paves the way for building a model on quite original lines. Or again, it is still more useful to buy some typical successful machine and try to make another exactly like it. Very few of the model-making firms object to this, unless the "copy" is offered for sale, in which case it is pretty obvious that friction, if not legal proceedings, will be the outcome.

Nearly all the non-flying models that I have seen owed their failure to either (1) Bad construction; (2) superfluous weight (*e.g.*, my Birmingham correspondent's); or (3) poor



## FOREIGN AVIATION NEWS.

### Helen Wins Michelin Cup.

IN contrast to previous years the closing of the competition for the International Michelin Cup on Tuesday last produced no excitement, as no attempt was made to beat Helen's flight on a Nieuport monoplane on September 8th, when he covered 1,252·8 kiloms. in 14 hrs. 7 mins. Helen thus wins the Cup for 1911.

### R.E.P. Doings.

ON Saturday last Bobba, on one of the new R.E.P. monoplanes, was away from the Buc Aerodrome for a couple of hours, during which he flew over Paris and also paid a visit to Juvisy. Meanwhile Gibert was flying on one of the new school machines which has duplicate levers in order that the instructor may teach his pupil to instinctively control the machine more or less. He was flying for 40 mins. with a passenger. On Monday he was up for an hour on the same machine. Among a large number of visitors to the school on Monday were M. Naudin and M. Morane.

### Legagneux After Height Honours.

LEGAGNEUX is determined to place the height record to his name again if it is at all possible, and has been assiduously practising, with that object in view, for some time at his aerodrome at Compiègne. On Sunday he got up to a height of 3,550 metres, beating his previous record by 350 metres, but not getting past the world's record. Meantime his partner Martinet had been giving some passenger flights and incidentally gave *le baptême de l'air* to Sizaire, of the well-known Sizaire-Naudin firm.

### Another French Military Pilot.

ON Sunday Lieut. Soulellan passed the third test for his military *brevet* at the Blériot School at Etampes.

### Farmans for French Colonies.

AT Mourmelon, on Sunday last, Captain Destouche received seven Henry Farman biplanes of the military type which are destined for service in the French Colonies. Four of the machines were tested in the morning by Bebaud and the remainder passed the stipulated tests during the afternoon.

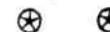
### A New Nieuport for Weymann.

ON Sunday afternoon, although there was a fairly strong wind blowing, Gobe mounted a 70-h.p. two-seater Nieuport, which had been prepared for Weymann, and took it over to Rheims.

### At the Deperdussin School at Etampes.

PASCAL, the chief pilot at the Deperdussin School at Etampes, was practising high flying on Sunday afternoon, and during a test of over an hour was up for most of the

materials. The first and second can in large measure be avoided by the methods I have just suggested, but it is well to ascertain exactly what the model you intend to copy has done in open competition. The term "prize winner" is rather misleading and it is always advisable to ask, "How many?" Numerous disappointments are ascribable to poor materials, especially rubber. That imported from France and Germany is usually of wretched quality, albeit of tempting price. A very good test is to procure a sample, suspend a weight from it for an hour or so, and then see whether it comes back to anything appreciably like its original length. Wood should be thoroughly seasoned and fabric proofed to resist damp. And varnish must be used, especially on propellers, which, by the way, are the hardest things to make that the model maker has to deal with. These should always be bought, if possible, at the outset, unless indeed the would-be model maker is a "boy-scout" and consequently has his language well under control. The amateur must also learn to climb trees, and it is never safe to fly a racing machine unless one is wearing a pair of old "brekks" that will not suffer in the process. If any more of our members care to write to me in reference to other difficulties they have encountered, I shall be very pleased to deal with them in "School Aero Club Notes." All communications relative to the Federation to be addressed to 15, Arlington Road, Surbiton.



time at an altitude of well over 1,000 metres. He flew over the town and also over Guinette Castle.

### Startled by a Train.

WHILE practising at Etampes on the 24th inst., Gilbert was flying along the railway at a somewhat low altitude, when a train suddenly passed and startled him. He commenced a *vol plané*, but was caught by a gust of wind which capsized the machine and sent it to the ground with a crash. The aviator was picked up unconscious and taken to the hospital.

### From Rheims to Douzy in 52 Minutes.

KEEPING mostly at an altitude of about 800 metres, Bathiat, on a Sommer monoplane, on Monday last, flew from Rheims to Douzy, a distance of 105 kiloms., in 52 mins.

### Santoni Flying Across Country.

DURING a visit to the Deperdussin School at Courcy-Betheny, Mr. Lawrence Santoni was testing one of the machines, and went for a lengthy cross-country excursion on it. Virant, back from Geneva, was practising high climbing, and got up 1,500 metres in 22 mins.

### The First Six-Seated 'Plane.

SOME time ago we referred to the fact that M. Henri Deutsch (de la Meurthe) had ordered a special aeroplane to be built. This is now practically ready, and has been on private view at the Blériot works. In general appearance it resembles a combination of a well-appointed taxicab and a large monoplane. The chassis had to be modified from the ordinary Blériot type, as there is an elevator as well as a tail on this machine. The 100-h.p. Gnome motor and the propeller are arranged at the rear of the body work, while the driver has a seat like that of a chauffeur outside the body, with a spare seat to his left. The coachwork is very comfortable and fitted with springy cane seats for four persons. Mica windows are fitted, and some of them are so arranged at the bottom of the machine that they enable a full view to be taken of the country passed over.

### The Next Paris Salon.

So great has been the demand for space that the Chambre Syndicale des Industries Aeronautique have found some difficulty in finding room in the Grand Palais for all those who wish to exhibit. The eight who have been fortunate enough to secure the stands along the *Grand Nef* are Clement-Bayard, Astra, Blériot, Bristol, Albatross, Sommer, Nieuport, and Hanriot. Along the aisle to the right will be the stands of R.E.P., Brouin-Lauschi, Breguet, Morane-Saulnier, Pischoff, Voisin, Deperdussin and Gnome, while along the left-hand aisle will be Farman, Savory, Borel, Hutchinson, Zodiac, Primas, Ratmenoff and Kauffmann.

**A Competition for Sculptors.**

THE Aero Club of France having decided to erect a public monument "*A la gloire de l'Aviation Francaise*" is now arranging to hold a competition amongst sculptors with a view to obtaining a suitable design. The subject is to be allegorical, and although actual aerial apparatus need not figure in the principal motif of the monument, aeroplanes, balloons and dirigibles should be worked into the secondary place, such as bas reliefs round the base of the monument. The models, which must be delivered before the end of the month, are to be to a scale of 20 c.m. to the metre. The competition is confined to French artists, and the prizes are, first, 1,000 francs; second, 600 francs; and third, 400 francs. The models will be on view at the Aeronautic Salon from December 16th to January 2nd.

**A Prize for Safety Parachutes.**

M. LALANCE has written to the Aero Club of France offering to double the prize which he offered for a safety parachute for aviators, increasing it to 10,000 francs for a period of three years. The Lalance prize, which was created last year, is open to all safety parachutes, provided they do not exceed 25 kilogs. in weight.

**A Blériot in the Crimea.**

LIEUT. GELHAS, of the Russian Aviation Corps, flew from Sebastopol over the Crimean Mountains to Sondan. According to his barograph he was at a height of 2,825 metres. He subsequently landed in the grounds of the Imperial Castle at Livadia.

**An Aerial Squadron.**

SEVEN officers at the Blériot Military School at Etampes, having to go to Versailles on the 25th ult., to pass an oral examination in connection with the superior military certificate, it was decided that they should travel by aeroplane. The officers were Lieuts. Bellemois, Van Denvaero, Lantheaume, de Geyer, Silvestre, Boucher and Clerc. Under the command of Captain Felix they all got away in good style and arrived at Satory without incident. On Saturday three of them flew back to Etampes, while two others returned on Sunday.

**Vedrines at Toulon.**

STARTING from the Lagoubran Racecourse at Toulon on the 25th ult., on his Deperdussin monoplane, Vedrines flew over the wreck of the *Liberte*, and from a height of 20 metres dropped a wreath of immortelles on to what remained of the warship, in memory of the men who met their death in this terrible explosion. The wreath missed its mark and fell in the sea, but was picked up by the gendarmes and placed on the wreck. The aviator afterwards flew back to Marseilles and landed after being in the air for 40 mins.

**Brindejonc Continues His Tour.**

ON the 28th ult., Brindejonc des Moulinais on his Borel-Morane monoplane flew over from Grisolles to Albi, covering the 95 kiloms. in 58 mins. He passed over the town at a height of about 150 metres, and circled round the cathedral spire before landing on the football ground.

**The Milan-Turin Event.**

THE race for Italian aviators from Milan to Turin, which was started on Sunday, proved a sweeping victory for Blériot machines, as the three who got through, Maffei, Vebona and Manissero, were all so mounted. The times for the 142 kiloms. were: Maffei, 1h. 39m. 33 $\frac{1}{2}$ s.; Vebona, 1h. 46m. 19s.; and Manissero, 1h. 46m. 40 $\frac{1}{2}$ s. Bé and Bigliani abandoned the contest soon after leaving Milan, while Brilli made a sudden landing at Mortara. The Minister of Post and Telegraph arranged for an aerial mail service, to be worked in connection with the flight, and gave permission for a special cancelling stamp to be made.

**An Aerial 'Bus in Austria.**

AT the Wiener-Neustadt Aerodrome on Monday, Warchalowski succeeded in carrying three passengers beside himself for 45 minutes. As this was officially observed, it beats the world's record, made by Busson last March, when he covered 50 kiloms. in 31 minutes, but unofficially this has been bettered several times since, by Sommer and others.

**Four Machines Over Bucharest.**

ON the 23rd ult. the inhabitants of Bucharest had the unusual sight of four aeroplanes over their city, these machines being piloted by Lieuts. Protopopescu and Negrescu on their Farman machines, and Lieuts. Zorileanu and Capsa on Blériots, all of whom had been taking part in the Roumanian Manoeuvres. In the afternoon Lieuts. Zorileanu and Capsa flew over to Ploesti, covering the 61 kiloms. in 30 minutes. After having dinner, the return was made in the face of an adverse wind, eight minutes longer being occupied in the journey.

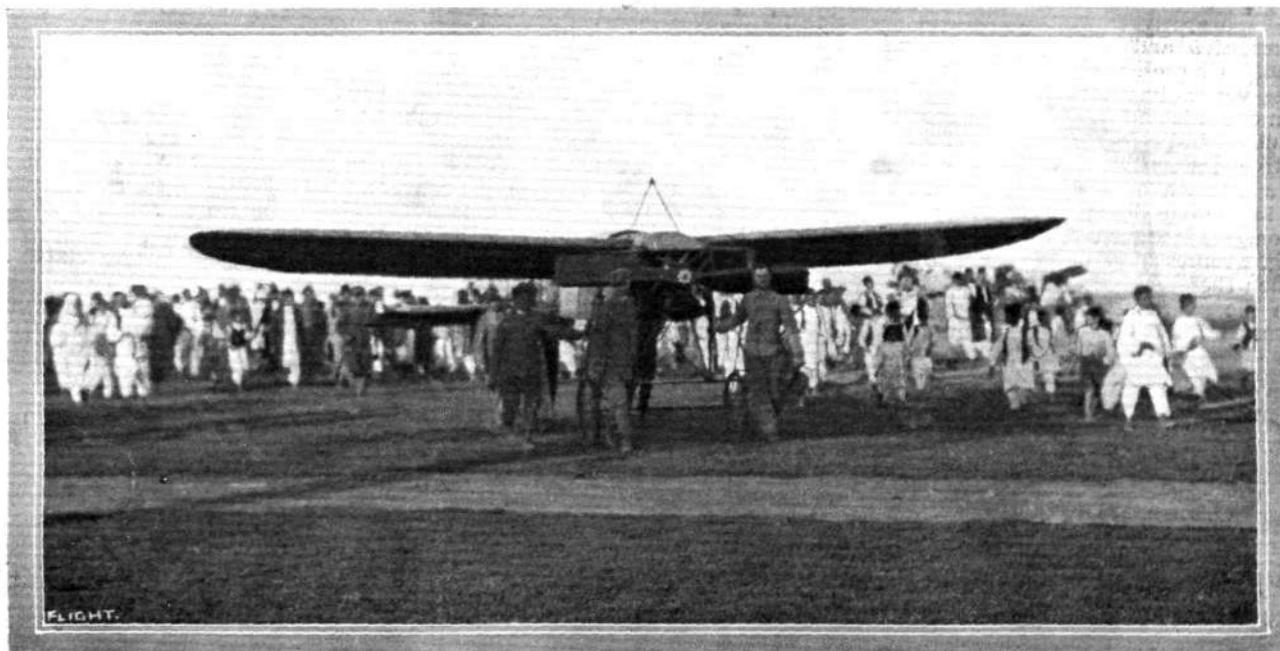
**W.H.C. Propellers in Holland.**

MR. MONNIER HARPER, 98, Kanaalweg, Scheveningen, Holland, now flying the Monnier Harper monoplane, has taken up the agency for W.H.C. aeroplanes, fittings and propellers in Holland.

**The Gordon-Bennett Balloon Cup.**

THE official award in connection with the Gordon-Bennett Balloon Cup has now been passed by the Aero Club of America, the result of the contest being as follows:

Lieut. Hans Gericke (Germany) ... Berlin II	... 471 miles.
Lieut. P. Lahm (United States) ... Buckeye	... 408 ..
Lieut. L. Wogl (Germany) ... Berlin I	... 350 ..
Mr. J. Berry (United States) ... Million	... 293 ..
Mr. W. Assman (United States) ... America II	... 275 ..
M. Emile Dubonnet (France) ... Condor III	... 200 ..



**THE AEROPLANE IN ACTUAL WARFARE.**—Capt. Piazza, of the Italian Army, bringing out his Blériot monoplane at Tripoli for the purpose of reconnoitring the Turkish entrenchments outside the Tripoli fortifications. Note the crowd of Arabs who are following in the wake of the aeroplane.

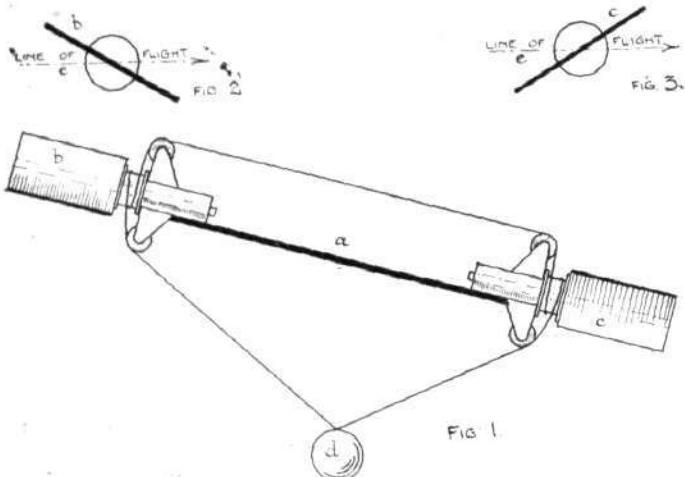
## TWO INTERESTING PATENTS.

CONCERNING the problem of lateral balance, which has in the past formed the theme of much discussion and even litigation, the accompanying extracts from patents taken out in 1868 and 1870, brought to our notice by that eminent pioneer in research, J. W. Dunne, are interesting in that they indicate how this problem was regarded in those days.

The first of these extracts is taken from a patent granted to Matthew Piers Watt Boulton in 1868. It has reference to the maintenance of side balance by the employment of planes rotatable about horizontal axes situated at the ends of the main supporting surfaces, a method closely analogous to that adopted on Curtiss biplanes of the present day.

Fig. 1, sketched from the original drawing accompanying the specification, illustrates his invention and the manner in which it is operated. The following is an extract from the subject matter of his patent:—

"Fig. 1 represents a transverse section of a plane fitted with rudders constructed according to my invention to prevent its turning over on an axis in its line of motion through the air. *a* is a section of the plane which is supposed to have taken a position inclined to the horizon; *b* and *c* are two vanes mounted on axes one at each side of the plane, so that it can be turned round like a throttle valve; *d* is a heavy body suspended by an endless cord, which passing over guide pulleys is wound for several times on barrels on



BOULTON'S PENDULUM-OPERATED BALANCERS, 1868.—*a*=main supporting surface; *b c*=rotatable balancers; *d*=pendulum-operating balancers by means of cords passing over drums on their axes.

the axes of *b* and *c*. When the plane takes an inclined position, as represented in the figure, the weight *d* tending to hang vertically under the centre of gravity tightens the cord on one side and slackens it on the other, and thus causes the vanes *b* and *c* to turn into inclined positions upon their respective axes. The cord is so wound upon the barrels *b* and *c* that while the one is caused by the action of *d* to rotate in the one direction the other rotates in the opposite direction.

"Fig. 2 represents an end view of *b*, and Fig. 3 an end view of *c* when these vanes are turned to suit the oblique position of *a* in Fig. 1. The plane being moved through the air in the direction of the arrow *e*, the air presses upon the under surface of the vane *c* and on the upper surface of *b*, and thus tends to restore the plane to its horizontal attitude."

It will be seen that theoretically, in the operation of Boulton's balancers, no relative change would occur in the resistances presented to forward advance on the right and left-hand sides respectively of the machine, and although not definitely stated in the specification, it is quite likely that Boulton supposed this to be one of the advantages of such a system.

In this connection it will be remembered that the chief claim of the Wright Brothers is that any method of restoring lateral balance by the variable inclination of surfaces disposed at equal distances on each side of the centre point of the machine is accompanied by the introduction of unequal

resistances on each side of the machine. As a result, a swerving effect is set up which necessitates the simultaneous use of the rudder.

It was on this point that the legal battle between the Wright Brothers and Glen Curtiss was fought in the American Courts.

Another interesting point in Boulton's invention is the manner in which the balancers are operated by cables passing over wooden drums keyed to their axes, which recalls somewhat the Wright Brothers' method of controlling their early gliders in which the pilot assumed a recumbent position.

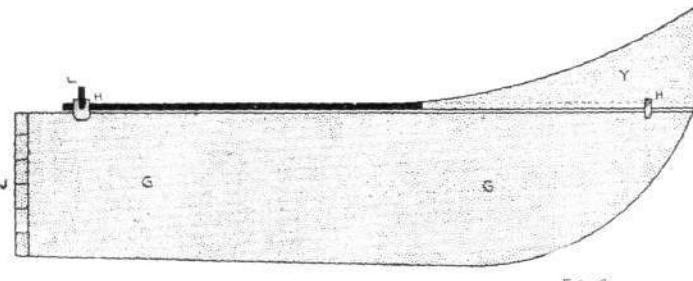
The other patent was taken out by Richard Harte in 1870. In his specification he proposed an aeroplane propelled by a screw, in which the supporting surfaces did not move relatively to the other parts of the machine. It is interesting to note that, while he intended to use the forward motion through air as a means of preserving lateral balance, his longitudinal balance was to have been maintained by the use of a "beak" or heavy metal bob with which he could adjust the centre of gravity to suit the centre of pressure.

His balancers, except in the method by which they are operated, were very similar to the ailerons or hinged flaps that are employed to-day.

Fig. 4 is a sketch taken from the drawings accompanying his original specification.

The section referring to this is worded as follows:—

"At the end and back or hinder part of each wing is a flap which moves up and down upon a hinge in the back edge of wing. This hinge is prolonged in the shape of a rod, and this rod is in connection with a lever, by means of which the flap is made to rise above or fall below the rest of the surface of the wing, this lever being in connection



HARTE'S BALANCERS, 1870.—*G*=wing; *H*=hinge of wing flap; *J*=junction of wing to main body; *L*=lever operating wing flap; *Y*=wing flap.

with a second lever which is within reach of the person who steers the machine.

"The motion of the fans of the screw propeller being rotatory tends to give a rotation to the whole machine in the opposite direction. This I counteract by means of the flaps of the wings, each of which acts upon the principle of the ship rudder, and their combined action is such that when one flap is turned up and the other down they simply counteract this tendency of the machine to rotate and keep it steady."

Referring to the operation of these flaps, Harte makes the following observation:—

"When both flaps are depressed the machine will descend. When both are equally raised it will ascend, and when both are raised, but unequally, the machine will make a curve towards the side on which the flap is most raised."



#### A British Superior Certificate.

In the official notices of the Royal Aero Club on page 960 will be found an important announcement regarding the institution by the Royal Aero Club of a superior aviator's certificate. Briefly, the candidates for this certificate must hold the ordinary *brevet* and make three tests, including a 100 mile cross-country out-and-home flight, a height flight of 1,000 feet, and a gliding flight from 500 feet above the ground, and landing within a hundred yards of the starting point.

## CORRESPONDENCE.

\*\* The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

**Correspondents communicating with regard to letters which have appeared in FLIGHT, would much facilitate ready reference by quoting the number of each letter.**

**Dr. Hankin's Study of Bird Flight.**

[1406] I feel that I owe some sort of apology to your readers for the haphazard arrangement of the chapters in my "Study of Bird Flight." We are dealing with a very complicated tangle of facts. It is impossible to describe soaring flight without describing flight manœuvres, and conversely it is impossible to understand these manœuvres without some knowledge of soaring flight. The haphazard arrangement must necessarily expose me to criticism. For instance, while thanking Mr. J. W. Dunne for his appreciative reference to my work (1363), I may venture to explain that he is in error in thinking that I have definitely "ruled out" the ascending current hypothesis in my earlier chapters. The most laborious part of my observations have been connected with getting evidence for and against ascending currents (in the shape of "heat eddies"). Hence your readers will do well to imitate Mr. Dunne in keeping an open mind on the subject. Mr. Dunne's observation that gulls in the open sea invariably congregate together over one spot is obviously of interest. Equally obviously there are two possible explanations. Either the birds keep together to take advantage of an ascending current, or they keep together owing to the presence of food or owing to some gregarious instinct. If Mr. Dunne was to let loose a toy hydrogen balloon under a group of gulls, and another (of equal buoyancy) at some distance away, the first balloon should rise quicker than the other if there is an ascending current. It is easy to suggest other experimental methods that might lead to a means of deciding between the two possibilities. I have frequently seen feathers floating near circling birds, but never thereby obtained evidence of the presence of an ascending current. In one case, however, I saw an object that I thought was a feather that rose to a great height under some circling birds, as if lifted by an ascending current. I followed it with my binocular and fortunately waited till it came down. It turned out to be a white butterfly.

Mr. Dunne draws attention to the increased stability of flex-gliding. This observation accords with my own experience. I suggest that if Mr. Dunne was to continue his observations of sea birds he might possibly discover the cause of this increased stability. I doubt whether any assumption of ascending currents could lead to an explanation of the phenomenon.

Another matter in which I feel that I am exposed to criticism is my statement that in flex-gliding there is a negative angle of incidence. Most of your readers will probably, and no doubt rightly, draw the conclusion that I know very little about aeronautics. But as regards this negative angle of incidence, I suggest that they should reserve their opinion till they have read my chapter dealing with "The position of the centre of gravity under different conditions of flight," in which they will find facts that render the negative angle of incidence less unintelligible.

A correction is needed in Chapter XVI. I there state that "the centre of effort of the wings bears a different relation to the centre of gravity according as the bird is or is not taking energy from the air." For "centre of effort," read "centre of area."

Agra, India.

E. H. HANKIN.

**New Indian Patent Act.**

[1407] May I through the columns of your paper bring to the notice of such of your readers as are interested in Indian patents the fact that a new Act comes into force in India on January 1st, 1912, which will alter the conditions under which valid patents are obtainable? The particular point to which I should like to draw attention is that, under the new Act, valid Letters Patent cannot be obtained for an invention which has been previously used or published (as by the printed British specification) in India. Under the present Act, however, it is allowable to file an application at any time within one year of the filing of the British appli-

cation, or of the actual sealing of the British Letters Patent. Therefore, any intending applicants for Indian patents of which the corresponding British specifications are now published, or will be published by December 31st next, should take care to have their applications filed before that date.

128, Colmore Row, Birmingham. CHAS. B. KETLEY.

**Twisting Tail for Steering.**

[1408] Mr. Fox, in his letter, No. 1391, would have established his prior claim on flexible steering tails more surely if he had given details of his invention and some actual proof which could be verified on a certain date. Why didn't he patent the idea before 1910 if he found it so successful in 1894? I experimented with flexible tails many years before 1902, but made no attempt to establish a claim prior to that date because I could not substantiate it from public evidence. I thank Mr. Richards for his letter, No. 1395, on the subject. In reply, I am interested to know in what respect his steering tail is dissimilar to the one you kindly illustrated for me in FLIGHT, September 30th, 1911.

WILLIAM COCHRANE.

**The Avro School.**

[1409] We hope Mr. Herbert Spencer will accept our apologies for the slip in our advertisement in connection with the "Avro" School.

Your readers, on looking at our advertisement, will see that we detailed seven prizes as having been won by our pupils. Unfortunately, the third prize for the day was quite accidentally included.

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**Natural Stability.**

[1410] Mr. Booth is quite correct (1402) as to the stabilising effect of the box kite arrangement when placed diamond fashion, i.e., with diagonals horizontal and vertical, on an aeroplane. The same principle is included in my patent of 1909, and was shown in the model which had a place next to the "Redivalls" at the last Aero Show. Mr. Booth will find a description of the machine in "Natural Stability," just published by Messrs. E. and F. N. Spon. A paper model of the same design was illustrated in FLIGHT, November 19th, 1910.

W. LE MAITRE.

**Tight-Rope Launching for Aeroplanes.**

[1411] Referring to your note on Lieut. T. C. Ellyson's experiments on the Curtiss ground, you may remember that the Aeroplane Building and Flying Society had a pair of steel wire cables erected for the purpose of launching their glider. A description of this device was printed in FLIGHT, October 8th, 1910, and a photo appeared in FLIGHT, February 4th, 1911. We found it possible to get up a speed of 50 m.p.h. on cables 200 feet long, with one end fast to two masts 30 feet high.

W. LE MAITRE, Hon. Sec., Aeroplane Building and Flying Society.

**MODELS.**

**How to Build a Model.**

[1412] Re my article on "How to Build a Model," which you printed in last week's FLIGHT, I have been asked, "Why it is not possible for a model so large as the one I have described to fly further than 300 feet?"

This question is evidently due to some little misapprehension. Certainly I mentioned this distance, but I also mentioned the fact that my speciality was natural stability, not long-distance work. To make this or any model fly further, it is only necessary to slacken the tension on the elastic and so make it possible to get more turns on the propellers. Roughly, one should get, with a slight following wind, about 15 ins. forward flight for each turn of the propeller.

The reason I gave so great tension of elastic was because my model was made to fly comparatively short distances in very rough weather, with a view to demonstrating its stability.

Another model, with slacker elastic, but built on similar lines, has done its 48 secs. duration in the presence of Mr. Melly, the Liverpool aviator, and its natural lateral stability has so impressed a prominent firm of aeronautical engineers that they are now building a full-sized aeroplane, which will enable the principle involved to be practically tested in actual practice.

I would also point out to such of your readers that may build a model to my design, that no dihedral angle is necessary. Side panels built on my lines and in my proportions to the size of the main plane (1:6), do away with any need for dihedral angle.

In actual flight the model is quite steady, does not roll, and cannot be upset.

Eccles.

WILLIAM BOOTH.

### Long-Distance Flyers.

[1413] I would like, through the agency of your columns, to add a word or two in the discussion concerning "long-distance flyers propelled by elastic."

The point which, in my opinion, is missed by all your correspondents is that in model flying there are two distinct branches. On the one hand, we have models designed to fly a long way at a big speed; on the other hand, there are models not firstly intended to break records, but designed to show some device for stability or some other proposed improvement.

Many of your correspondents seem determined to mix these branches together. Mr. Hill and "Buitre" condemn a long-distance model as useless to the science of flight. Yet on a machine of this type the experiments that can be carried out with propellers are infinite in number, because the slightest variation in blade area, pitch or shape, will make itself felt to the tune of possibly a hundred yards one way or the other.

"Buitre" states in letter (1396) that he drives his 36 in. model with 2·8 in. propellers and four strands of elastic to each.

Firstly, four strands of strip elastic to a propeller less than 3 in. in diameter is a tremendous power. Those four strands should drive 8 in. propellers (or, at any rate, 6 in.) sufficiently fast. Second, if the propellers were enlarged, and if necessary more rubber added, it is practically certain that the machine would fly further.

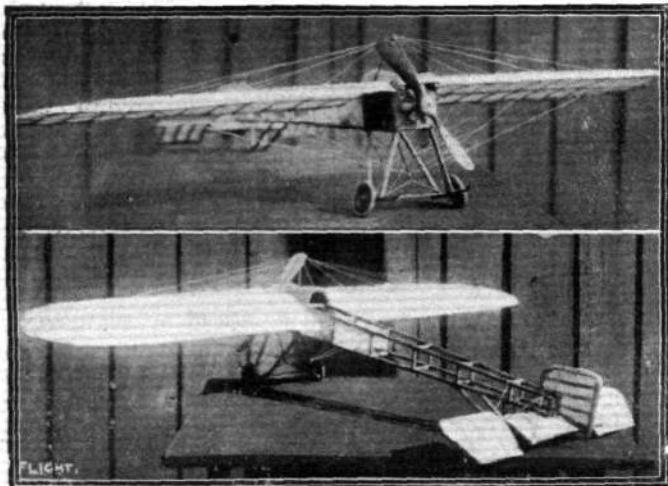
He terms his model "somewhat low powered," but the power is not so much deficient as wasted in the propellers used.

I am an active member of the Manchester Model Aero Club, and have had a lot of experience in making, flying, and watching others fly models, and I must say that I never can agree with those who consider that a model loses value as a model by being a little over-powered, although that same over-powering may have almost doubled its value as a flyer.

ALAN F. JONES.

### Model Construction.

[1414] I enclose herewith two photos I have taken of a model Morane-Borel monoplane which I hope you may consider of sufficient interest to reproduce in your excellent paper. The model



was entirely made by a boy of sixteen—Robairt Dagonet—out of odd pieces of wood and wire, and cost nothing to build!

Chatham. J. C. HEWETT, Major, A.P.D.

### PUBLICATIONS RECEIVED.

*All About Airships: a Book for Boys.* By Ralph Simmonds. London: Cassell and Co., Ltd. Price 6s. net.

*The Law of the Air.* By Harold D. Hazeltine, LL.D. Published for the University of London Press by Hodder and Stoughton, Warwick Square. Price 5s. net.

*The Air Scout.* By Herbert Strang. London: Henry Frowde and Hodder and Stoughton. Price 6s.

*Heroes of the Air.* By Claude Grahame-White and Harry Harper. London: Henry Frowde and Hodder and Stoughton. Price 6s.

*Touring Club Italiano: Annuario dell'Aeronautica 1911-1912.* Milan: Touring Club Italiano, Via Monte Napoleon, 14. Price 6 francs.

*Les Aeroplanes de 1911.* By R. de Gaston. Paris: Librairie Aéronautique, 40, rue de Seine. Price 6 francs.



### NEW COMPANIES REGISTERED.

**African Aviation Synd., Ltd.**—Capital £10,000 in £1 shares. Formed to promote the science and practice of aviation and aerial navigation in Africa and elsewhere.

**General Aviation Contractors, Ltd.**, 30, Regent Street, W.—Capital £2,000, in 1,905 ordinary shares of £1 each and 1,900 founders' shares of 1s. each. Manufacturers of aeroplanes, &c.

**Portholme Aerodrome, Ltd.**, 16, Guildhall Road, Northampton.—Capital £5,000 in £1 shares (4,900 seven per cent. cumulative pref. and 100 deferred). Under agreement between J. Radley and W. B. R. Moorhouse, trading as Portholme Aerodrome Co., to purchase the business of engineers, aviators and aeroplane manufacturers and repairers carried on by them at Huntingdon.



### Aeronautical Patents Published.

Applied for in 1910.

Published November 2nd, 1911.

23,303. R. F. BURGA. Aeroplanes.

Applied for in 1911.

Published November 2nd, 1911.

11,451. G. MIRABELLO. Indicating course of balloons, airships, &c.  
13,623. A. SCHAEFFER. Air propeller driven by electric motor.

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